

**INFLUENCE OF SELECTED SOCIO-CULTURAL FACTORS ON GENDER
PARTICIPATION IN MANAGEMENT OF WATER PROJECTS IN NJORO
SUB-COUNTY, NAKURU KENYA**

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**A Thesis Submitted to Graduate School in Partial Fulfillment of the Requirement for
the Award of the Degree of Doctor of Philosophy in Community Studies and Extension
of Egerton University**

EGERTON UNIVERSITY

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DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and has not been presented in part or as a whole for any other academic award in this or any other university.

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DEDICATION

This work is dedicated to my parents Justus Wambu and Jane Wambu, my wife Purity Wanjiku and my son Brian Wambu who inspired and stood with me to course completion of my PhD studies. To my brothers, Fredrick Wambu and Joe Kinuthia and my sisters, Martha Wambu and Zipporah Wangare and their families for their love and support.

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ABSTRACT

Gender participation is integral for sustainable management of natural resources. Kenya as a country has made great efforts to entrench gender equity policies in public management positions, but there have been challenges derailing operationalization of the gender policies. When water management enter public domain women are usually under-represented in decision-making positions. Despite the role played by women in water resource management and the efforts that the government has made in enhancing women's participation in management of water resources there appears to be an existing gender gap between policy and practice. The main purpose of this study was to examine this gap specifically, to examine the influence of selected socio-cultural factors on gender participation in the management of water projects in Njoro Sub-county. The study used ex post facto research design and two theoretical frameworks culture theory and community participation theory. Purposive and stratified random sampling procedure were used to select 212 participants in three management categories (community, church and NARWASCO). Four divisional water officers were included in the study as key informants. Data was collected using interview schedule and questionnaire. Reliability of the instruments was estimated using Cronbach's alpha coefficient formulae and was found to be 0.819. This was an indication that the instruments attained a reliability coefficient above the required threshold and were therefore deemed as acceptable and suitable. The data obtained was analyzed using descriptive statistics and inferential statistics (ordered logistic regression). The study results indicate that two-thirds gender rule with P value of 0.041, land tenure with P value of 0.036, level of education with P value of 0.000, and gender roles with P value of 0.001 had statistical significant influence on gender participation in management of the water projects at 5% level of significance. The results implies that two-thirdss gender rule, land ownership, level of education and gender roles load influenced social power to negotiate for membership and decision making positions in management of water projects. Landownership was the main hinderance in achieving two-thirdss gender rule since it was the main criteria for membership. The findings of the study may be used by stakeholders in water management to ensure that integration of gender perspective in the project cycle and address socio-cultural factors affecting gender inequality. This study recommends that water projects should have affirmative action in their project by-laws in order to ensure two-thirds gender rule is fully operationalized. This will ensure that women practical and strategic needs on water are realized.

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ACRONYMS AND ABBREVIATIONS

CAAC	Catchment Area Advisory Committees
CBOs	Community Based Organisations
CDF	Constituency Development Fund
CEDAW	Convention on Elimination on all forms of Dicrimination Against Women
CoK	Constitution of Kenya
GWA	Gender and Water Alliance
IWM	Integrated Watershed Management
IWRM	Integrated Water Resources Management
MDGs	Millennium Development Goals
MWI	Ministry of Water and Irrigation
NARUWASCO	Nakuru Rural Water and Sewerage Company
NEMA	National Environmental Management Authority
NGOs	Non-Governmental Organizations
NWP	National Water Policy
OLR	Ordered Logistic Regression
RoK	Republic of Kenya
SDGs	Sustainable Development Goals
SFT	Settlement Fund Trustee
UN	United Nations
UNDP	United Nations Development Programme
UNIFEM	United Nation Development Fund for Women
WHO	World Health Organization
WRAP	Water Resource Assessment Project
WRMA	Water Resource Management Authority
WRUAS	Water Resource User Association
WSB	Water Service Board
WSPs	Water Service Providers
WSREB	Water Services Regulatory Board
WSTF	Water Service Trust Fund
NCWPs	Njoro Community Water Projects

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Globally almost one billion people across the world have no access to safe drinking water from improved water sources (Global Water Partnership report, 2010). Sub-Saharan Africa accounts for one third of that number, with about 330 million people without access to safe drinking water. This means Africa has the lowest safe drinking water supply coverage compared to other continents in the world (Global Water Partnership, 2010). In Kenya renewable fresh water supply is limited to only 647 cubic meters annually and categorized as water scarce country (Kariuki, 2013). This is far below the required water supply of 2500 cubic meters annually. Improved water source are sources that by nature of their construction or through active intervention are protected from outside contamination, in particular from contamination with fecal matter. This sources include, piped water into dwelling plot or yard; public tap/standpipe; tube well/borehole; protected dug well; protected spring and rainwater harvesting World Health Organization (WHO, 2008).

Accesses to clean drinking water is a human right and it is entrenched in Sustainable Development Goals SDGs number six United Nations Development Programme (UNDP, 2016). Water and sanitation is at the very core of sustainable development goals, which is very critical to the survival of people and the planet. Goal six not only addresses the issues relating to drinking water, sanitation and hygiene, but also the quality and sustainability of water resources worldwide. Already, water stress affects countries on every continent and hinders the sustainability of natural resources, as well as economic and social development. In Africa as a result of low economic growth, water pollution and low investment in supply infrastructure, every year millions of people, most of them children, die from diseases associated with inadequate water supply, sanitation and hygiene (UNDP, 2016).

Water scarcity is increasing as a result of drought and desertification worsening these trends in Africa. By 2050, it is projected that at least one in four people will be affected by recurring water shortages (WHO, 2008). United Nations (UN) is advocating third world countries to ensure universal access to safe and affordable drinking water for all by 2030. It also advocates for third world countries to invest in adequate infrastructure, provide sanitation facilities, protecting and restoring water-related ecosystems such as forests, mountains,

wetlands and rivers in order to mitigate water scarcity (Global Water Partnership, 2010). More international cooperation is also needed to encourage water efficiency and support treatment technologies in developing countries. In the sustainable development goals, the focus is refined to include the participation of local communities, which is captured in the cycle of Global Analysis and Assessment of Sanitation and Drinking-Water monitoring (UNDP, 2016). Effective water and sanitation management relies on the participation of a range of stakeholders, including local communities.

The social and economic effects caused by a lack of clean water are often the highest priorities of African communities when development projects are concerned. The situation of access to clean water and sanitation in rural Africa is even more dismal (UNDP, 2016). Equitable access to safe and enough water for domestic use, hygiene, food production and ecological balance is a basic right for both men and women. According to World Health Organization (2008), water is accessed and utilized differently by women and men as a result of socio-culturally imposed roles in the household and the society at large. This affects men and women, participation in management of water in the society. These issues have led to the importance of gender integration in water resource management and in the study of gender participation in water resources management.

In Africa, women play a major role in collecting, managing and maintaining the communal water supplies, regulating and controlling its social use and maintenance Gender and Women Alliance (GWA, 2006). But traditionally men have been responsible for making decisions and hence dominate in management of water resources. The dominance of men is as a result of socio-cultural factors such as land ownership, which is patriarchal inherited or controlled by men. Also men having higher level of education than females, unequal distribution and gender stereotyping of gender roles (Ellis & Cutura, 2007). These socio-cultural factors may weaken or reinforce unequal participation of women and men in decision making and management positions in the water user's management committees. According to Kariuki (2013) water projects in Kenya have failed to recognize the heavy burden women have in performing domestic, communal and productive roles hence weakening their chances of being active participants in water management.

A focus on women's increased participation in formal water institutions often hides the more informal management roles they undertake in practice, through everyday activities and social

relations (Poku, 2006). It is often in the informal context where access to resources and management is shaped, where gender and power relations are played out. Opinions that women cannot perform maintenance and repair tasks thus seem to be based more on stereotyped gender concepts than on any real inabilities (GWA, 2006). Women may well make better maintenance and repair workers than men (Roshini & Linda, 2009). The reasons advanced are the direct concern and personal interest of women in their water supply; their regular visits to distribution points; the compatibility of preventive maintenance and user education with women's gender-specific tasks. Besides the roles of women and men as users and managers of water, there are strategic socio-cultural constraints which affect women more than men in participating in management of water projects. This include equitable division in rights, domestic and public roles, and restrictions in autonomy over access to and control over land resources, low levels of education and independent choices in decision making (Kachika, 2009).

According to Gender and Water Alliance (2003) water rights are mostly related to land tenure and are culturally transferred in a patriarchal manner. Land has been recognized as a primary source of wellbeing, wealth, social status and power. In rural areas, land is the basis for food, access to water and other economic activities Food and Agriculture Organization (FAO, 2014). Land is also the most significant provider of employment opportunities. Persisting gender inequalities in customary and legal land tenure systems affect mostly women participation in management of the water projects. Often women only have the right to use land. They work as unpaid family workers on the fields of their family (FAO, 2014) or, if they cultivate on their own, they are disadvantaged in the access to bank credit and technical and knowledge support because of the missing land title (FAO, 2010). Without secure rights to land and access to support services, women's opportunities to participate in water management, make economic decisions and start independent income-generating activities are limited.

Education achievements between men and women is a key contributor to gender equality in rural water management. Illiteracy situation limits women's capacities to be elected in leadership positions, contribute in decision making, access water training opportunities and participation in water meetings. With decentralization of water management to the lowest appropriate levels many of the operation, maintenance and repair tasks are delegated to the communities Republic of Kenya (RoK, 2016). In the sharing of water management activities

in the project education level plays a very strong influence. Initially the tasks have been seen as purely technical and a male prerogative (GWA, 2003). According to Harvey and Reeds (2007) education levels have affected participation of both men and women in management of water as a resource. Therefore, for water and sanitation project to provide services efficiently, women and men must be empowered to participate actively in management.

Time and workloads resulting from the gendered division of labour as well as mobility are the main critical factors that hinder women participation in management of water projects. As women have multiple roles in agricultural societies, they suffer from heavy workloads and have little time to participate in water project activities (Damaske, 2011). Development practitioners need to be aware of the heavy work load women face when allocating duties in water management. In most communities, women provide unpaid labour on the land but they often have no right to participate in decision making regarding land use. Allocation of domestic, reproductive and communal roles in the society must be put into consideration when distributing duties in water management in order to improve participation of both men and women in water management initiatives (Harvey & Reed, 2007).

Community participation is an important means for introducing the demand driven/bottom up approach. It is an initial stimulus for communities to get involved and participate. It helps the communities to assess their own problems, prioritize the problems, suggest possible interventions to solve these problems and generally participate in all possible ways through contributing ideas, materials and finances. Community participation is a very powerful empowerment tool for the communities to own interventions intended to solve their problems. This is achieved through two main ways; One, it helps in the formation of management committees and two; it encourages the management committees to be gender balanced. In this way the communities become part and parcel of their own problem solving apparatus.

Sustainable water resource management can be achieved when women and men's tasks, rights, power relations and responsibilities are taken into account and both genders are equally involved in the management of water resource. When dealing with gender issues in Water Resource User Association (WRUAs), which include community, church and Nakuru Rural Water and Sewerage company supplies, the main issues are how; work, control and benefits are divided between women and men (Ong'or, 2005). In order to have improved and

a sustainable management of water supply, the involvement of both men and women in decision making process is very critical (Kulkarni, 2011). This is because, both women and men are provided with an opportunity to highlight their grievances on issues appertaining water management in their daily livelihood. Also men and women are able to mobilize the potential of water development and ensure that water is not a challenge for environmental and socio-economic development as they interact with water in their daily livelihood.

The Kenya government has decentralized water management responsibilities to county governments and community level with the aim of promoting local governance and public participation in water projects management. Decentralization strategy facilitates greater social ownership of water resources and hence more sustainable environmental outcomes and proper management (Guslits & Phartiyal, 2010). Decentralization of water management is based on the theory of community participation theory which encourages active participation of community members for sustainable development of water project. In addressing gender inequality in the water service sector, both the practical needs and strategic needs of women have to be addressed. In terms of the practical needs, women need to access water as a basic service to ensure the functioning of the family unit and sustain a minimum quality of life (Ellis & Cutura, 2007). In terms of strategic needs of women, the barriers that prevent women and men from operating at the same level, need to be removed and women need to be empowered to enjoy the same status as men to realize their full potential and contribute to national, social and cultural development (GWA, 2006).

In Njoro sub-county there are several water users' association projects that are aimed at domestic water supply. The water projects are under different management categories (community, church and Nakuru Rural Water and Sewage Company (NARUWASCO). In these water projects, gender relations and project procedures account for women having low representation in decision making committees than men. Although the Kenyan government has initiated two-thirds gender rule in any management position to promote a gender-sensitive approach to development, this has not been fully operationalized in most water and sanitation projects (Kamau, 2010). Majority of the water projects in Njoro sub-county are dominated by men in management positions. Jenkins and Riegels (2006) reported that women hold about 23.7% of leadership position in management of Njoro watershed. According to Convention on the Elimination of all forms of Discrimination against Women (CEDAW) (2009) gender differences and inequalities should be taken into account if water projects are

to be effective in serving the needs of men and women and achieving a long term goal of gender equality and equity in participation. This is an indication that women have unequal opportunities to participate fully in management of water projects compared to men. Despite the existence of the policies, legislative reforms, plans and programmes, gender disparities still exists in the levels of participation in decision making, access to and control of resources, opportunities and benefits of water resource management. This exclusion of women as a result of socio-cultural factors reinforces gender inequalities in the rural communities water projects. This study therefore investigated the influence of selected socio-cultural factors which include land tenure, gender roles and education and two-thirds gender rule on gender participation in management of water projects in Njoro Sub-county.

1.2 Statement of the Problem

Gender participation in management is a pre-condition for effective and sustainable water resource management. Women and men play different roles in relation to water resource management as a result of socio-cultural factors which have a strong tie with natural resource management in away that they influence attitude, social cohesion, equity and equality. In Kenya, efforts have been made towards addressing gender issues through enactment of the Kenya Constitution (2010) which advocates for not more than two-thirds of the same gender in any appointment or elective position. Women in most communities in Kenya have acquired valuable knowledge, experience and skills of handling, managing and use of water resources in the farms and household level. When water management enters into public domain, women usually have few opportunities to participate. In Njoro sub-county there are several water users' association projects in which social-cultural factors affect women participation and representation in management and decision-making. Despite the role played by women in water as a resource and the efforts that the government has made in enhancing women's participation in management of water resources, there is an existing gender gap between policy and practice. Therefore, there was a need to investigate this gap especially the influence of selected socio-cultural factors that include level of education, gender roles, two-thirds gender rule and land tenure on gender participation in the management of water projects in Njoro Sub-county.

1.3 Purpose of the Study

The purpose of this study was to examine the influence of selected socio-cultural factors on gender participation in the management of water projects in Njoro Sub-county.

1.4 Objectives of the Study

Specifically the study sought to:

- 1) To establish the influence of two-thirds gender rule on gender participation in management of water projects in Njoro Sub-county.
- 2) To establish the influence of land tenure on gender participation in management of water projects in Njoro Sub-county.
- 3) To assess the influence of gender roles on gender participation in management of water projects in Njoro Sub-county.
- 4) To assess the influence of level of education on gender participation in management of water projects in Njoro Sub-county.

1.5 Research Hypotheses of the Study

The following null hypotheses were tested at 0.05, alpha level of significance:

- Ho₁: Two-thirds gender rule has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county.
- Ho₂: Land tenure has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county.
- Ho₃: Gender roles has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county.
- Ho₄: Level of education has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county.

1.6 Significance of the Study

It is expected that the research findings and recommendations of this study will enable stakeholders in the water sector understand the importance of implementing the not more than two-thirds gender rule. This will be based on the strength of the evidence of information collected from this research, hence develop strategies for implementation of the gender policy in management activities and leadership positions. The research findings obtained are also expected to enable stakeholders in the water sector to overcome socio-cultural challenges in integration of gender issues in project planning, design, implementation, operation and maintenance of the water project. The research findings may also help in restructuring of activities and organization of the water project in order to ensure equitable participation and sharing of responsibilities at all levels and in a diversity of functions by both women and men in the water supply and sanitation projects.

1.7 Scope of the Study

The study involved all eligible members of the water project who were connected with water in their households/plots during the time of study in Njoro sub-county. The study dealt with the influence of two-thirds gender rule on gender participation and also dealt with selected socio-cultural factors, namely land tenure, level of education and gender roles and how they influenced gender participation in management. The main focus of management issues was; level of participation in committee meetings, leadership positions and decision making roles.

1.8 Limitations of the Study

- i) During the study most of the respondents who were approached were reluctant in giving information fearing that the information sought might be used to intimidate them or portray a negative image of them or their project. The researcher overcame the problem by explaining to them the main objective of the study was purely for academic purpose and assured them that the information they gave would be treated with utmost confidentiality. This assisted the participants to have a clear understanding of the aims of the study and exercise their rights to participate or not.
- ii) The study was carried out in Njoro Sub-county, Nakuru County, Kenya. Therefore, generalization of the findings to other areas of the country should be done with utmost caution since different regions differ from one another with respect to some socio-cultural factors such as level of education, land tenure and gender roles.
- iii) Project members also assumed that the research was aimed at funding their projects hence could have influenced the information. This was addressed by involving local leaders who assured the participant that the study was purely for academic purpose only.

1.9 Assumptions of the Study

The assumptions in this study were that all the respondents provided correct information and they answered the questions objectively. It was also assumed that the projects had updated records of their registered members and all transactions of management.

1.10 Definition of Terms

Gender: refers to the social attributes and opportunities associated with being male and female and the relationships among and between women, men, girls and boys. In this study it refers to the rights, privileges, duties, obligations, roles and status attributed to men, women boys and girls by virtue of their sex.

Gender Participation: refers to the process of assessing the implications of both women and men role in planned activities including legislation, policies, and programmes (UNDP, 2014). In this study it refers to taking into consideration the responsibilities and functions of both women and men as a strategy to promote gender equality and the empowerment of women.

Gender Roles: refers to socially and culturally constructed activities associated with males and females (UNDP, 2014). In this study it refers to socially acquired activities associated with males and females that may influence management of water projects through time utilization and labour stereotyping.

Influence: refers to the power to gain an effect from a phenomenon or get some result out of its interaction with another phenomenon (World Bank, 2008). In this study it refers to the extent to which selected socio-cultural factors affect gender participation in management of water projects.

Land Tenure: refers to the right to own and use land privately, collectively or in a cooperative manner (UNEP, 2009). In this study it refers to rights to own and make decisions on how the land should be used in water resource management by both men and women.

Level of Education: refer to the highest formal learning attained by an individual (UNDP, 2014). In this study it refers to the highest attainment of knowledge and skills necessary in management of water projects. This is typically divided into a number of educational stages covering pre-primary education, primary education, secondary education and tertiary education.

Management: involves all efforts geared towards working with the various resources within a watershed used to better human livelihoods satisfaction (UNDP, 2014). In this study it refers to coordination of activities to realize harmonious results of water resource management in terms of efficiency and effective results.

Participation: refers to the process of taking part or getting involved in project activities (UNDP, 2014). In this study it is the involvement in the management activities in the water projects.

Socio-cultural Factors: refers to factors derived from the traditional way of life, acquired norms, customs and values in an individual's culture (World Bank, 2008). In this study these include: land tenure, gender roles and level of education among men and women that affect participation of women and men in management of water projects.

Two-thirds Gender Rule: refers to a constitutional rule that entrenches a concept in article 81 (b) that not more than two-thirds of the members of elective or appointive bodies shall be of the same gender (RoK, 2010). In this study it refers to representation of males and female in management positions, where the available management positions are not dominated by not more than two-thirds representation of either gender.

Water project: this refers to making an area of water resource either underground or surface more useful (UNDP, 2014). In this study it refers to make water resource more useful through exploitation and its development in order to improve the livelihoods.

Water Resources Management: refers to systematic organization of water resources in regard to its development, use and protection and considering all sectors and institutions which use and affect water resources and provision of services at different levels of society (UNDP, 2014). According to this study it is the institutionalized activities of water resources development, utilization, allocation, conservation and control.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of literature related to selected socio-cultural factors affecting gender participation in water resource management projects for sustainable development. It identified and examined: the broad water situation, gender in water management and issues related to selected socio-cultural factors affecting gender participation in the management of water resource projects. Policies and theories relating to gender participation and conceptual framework were also discussed.

2.2 Water Situation in the World

According to the United Nations Development Programme (2014) the cause of the water crisis globally is believed to be far from a scarcity problem. Instead, it is as a result of poverty, inequality, and gender insensitive water management policies that are evident in most third world countries. Globally water is recognized as the most important resource for human survival. It is also recognized as the most critical natural resource for socio-economic development and environmental sustainability. Worldwide 884 million people have no access to clean water for drinking (Global Water Partnership, 2010). In Sub-Saharan Africa more than one third account for that number, with about 330 million people without access to safe drinking water. This means Africa has the least coverage of water supply compared to other continents in the world (Global Water Partnership, 2010).

In comparison to the rest of the world, in Africa distribution of water resource is extremely variable and water supplies are unequally distributed. Large areas of the African continent have been subjected to a series of prolonged and extreme droughts, floods and unpredictable weather conditions (FAO, 2012). These have been contributed by global climate change that has caused significant effect on water levels and availability especially in large river basins and underground water sources in the continent. In Africa, some countries share water aquifers, which has led to source of conflicts for the resource as a result of differing social and economic use (Ghosh, 2007).

Most communities in third world countries differ in socio-economic development and the need for water which complicates the search for equitable and sustainable solutions to water supply problems. In Africa, women and men have diverge uses of water depending on social

position leading to differences in access, control and use of water resource management. African women are disproportionately burdened by scarcity of clean water for drinking. Majority of African countries face a challenge in their efforts to meet the rapidly escalating demand for water that is driven by rapidly increasing populations (Guslits & Phartiyal, 2010). Water supplies continue to be a challenge because of resource depletion and pollution. While the demand for water is rising fast due to population growth it is coupled with rapid industrialization, irrigated agriculture and urbanization (Joshi, 2011). The situation is worse in arid and semi-arid areas of African countries. Boucher (2006) observed that whenever water management enters the public domain men take up leadership position and take the lead in decision making processes in the water committees. Women exclusion from decision making often leads to the development of water projects that are non-responsive to women's practical and strategic needs, yet women are the primary users of water in the community.

2.3 Water Situation in Kenya

There are about 42 million people living in Kenya, of which about 17 million (43 percent) do not have access to clean water (WHO, 2010). Kenya is classified among the most water scarce countries. Water shortage is being experienced both in rural and urban areas across the country. Water scarcity has been caused by increase in population, destruction of water towers for human settlement, competition of water use between agricultural production and domestic use. Climate change has also led to chronic cycles of extreme droughts and floods. For decades, water scarcity has been a key challenge in Kenya as a result of low investment in securing the resource, poor management, pollution, high water demands in irrigated agriculture and poor implementation of water laws and regulations (RoK, 2009). Despite the critical shortage of clean water in Kenya, urban slums and rural areas face the greatest challenge in access to clean water. Individuals living in urban slums and rural areas access polluted water, which has caused cholera epidemics and other water borne related diseases (Sever, 2005). In Kenya less than half of the rural population have access to clean water as opposed to the urban population where about 85 percent have access to clean water (World Bank, 2010). As a result of population increase in Kenya, it is estimated that by the year 2025, water availability will be 235 cubic meters per year which will be two-thirds less than the current 650 cubic meters (UNEP, 2009).

According to the Joint Monitoring Programme's 2012 report, access to safe water supplies throughout Kenya is 59% and access to improved sanitation is 32% (IFAD, 2012). There is

still an unmet need in rural and urban areas for both water and sanitation. Water shortage in Kenya has caused a large proportion of women and children to spend up to one-third of their day fetching water from the nearest fresh water source (Kariuki, 2013). Kenya depends heavily on water resources, not only for domestic use but also for agricultural production. Human populations throughout Kenya have been affected by a lack of clean drinking water due to overuse of land and increases in community settlements. The interaction between human and water resource in Kenya have reached a critical point as the government has not been able to supply water in adequate amounts to all citizens (Kariuki, 2013). The only solution to water problems is to have proper legislation on environment, land and water in order to secure water resource for economic and social development (NEMA, 2007).

In Kenya most of the water supply projects were developed with a focus on domestic water supply or providing water for livestock (Jenkins, 2008). Most communities use water for household, animal use and for small businesses. In the past, water management projects have not been properly designed to take into account the multiple uses of water (Keen, 2007). To cope with water scarcity, many households in Kenya incur a high cost of buying and installing storage tanks. Those who cannot afford are forced to survive with the little available unsafe water or pay a higher price for the available clean water (Kariuki, 2013). Poor management, inadequate maintenance and corruption are the main reasons for water scarcity (WHO, 2008). Well-connected water cartels with support from water supply company officials perpetuate artificial scarcity for their own benefits (Nyanjom, 2011). While some water traders are legitimate entrepreneurs others are corrupt drawing water from public supply lines and sell it to under-supplied areas at much higher cost than the normal (Bouwer, 2006).

In Njoro sub-county, considerable progress and efforts have been made in the recent years by Community Based Organizations (CBOs), Non-Governmental Organizations (NGOs) and Constituency Development Fund (CDF) in initiating water projects. The projects are aimed at household water connection, public stand pipe, and rain water harvesting in the rural households (Lelo, Chiuri & Jenkins, 2006). Currently in the sub-county, due to deforestation and land degradation in the Mau forest, water resource, whether in the form of surface water or under-groundwater, is declining resulting to some boreholes drying up and the water flow in the river to decline (Jenkins, 2008). In the sub-county, water resource is under increased

demand, which is being driven by population growth, changing lifestyles and increase in flower farms in the area.

2.4 Gender Participation in Water Resource Management

Most communities in Kenya, women play a major role in the management of water supply and sanitation (Keen, 2007). Water is important for agricultural production, domestic use, care of domestic animals, personal hygiene and sanitation. Due to their dependence on water resources, women have acquired considerable know-how in management of water resource including location, quality and storage methods (Lyons, 2004). However measures put in place to ensure improved water resource management and extending access to safe drinking water mostly overlooks the key role of women in water management (World Bank, 2009). Involvement of communities, both men and women, in the selection and planning of management issues and interventions is the key to successful gender mainstreaming (Guslits & Phartiyal, 2010). Not addressing the multiple uses of water has been highlighted as a major hindrance in equitable participation of women and men in Water Resource User Association (WUAs) (Gunduz, 2011).

Gender relations are hierarchal in most African societies, patriarchal in nature and tend to disadvantage women than men (Hulsebosch, 2003). These hierarchies are often socially and culturally acceptable and are subject to change over time (Kabane, 2010). Gender relations are subject to change and are characterised by conflict and regulated by other factors such as social class, gender and economic status of the family. At the policy level, the importance of gender aspects in rural water supply is often emphasized, yet its implementation has become elusive. Policy makers and project managers do not yet properly perceive gender aspects as potential contributors to sustainable water supplies (Joshi, 2011). However, the dynamics of power relations between women and men committee members in water management are not put into consideration. Women involvement in real decision making and the structural factors that perpetuate the subordinate position of women in community affairs are given little attention in water management. In addition, the participation and involvement of women and men in most community water management committees is not based on equality. According to WHO (2010), men dominate decisions making positions such as chairpersonship, office of treasurer and organizing secretary, while women are almost always kept as ordinary members with no defined tasks.

Women are active agents of change and dynamic promoters of social transformations that can alter the life of all members in the society (Ghosh, 2007). In many cases, gender relations and project procedures undermine women's chances to participate in discussions and decisions, in spite of their roles as users and managers of water (Katui-Katua, 2004). Underlying these are the strategic constraints: no equitable division in autonomy over access to and control over resources and independent choices in decision making by women in domestic and public domains. This may prevent participation of women and men at all levels of project planning. According to Vernooy (2006) the exclusion of women in decision making not only delays delivery of benefits, but also affects equity and institutional efficiency. Gender sensitivity which involves women participation in water management is therefore, important.

Gender cuts across the dimensions of intra-community differentiation and hierarchy. On matters concerning access and control of resources, both women and men interact with other aspects of socio-economic differences hence making both genders not to be considered homogeneous category in terms of their interests and needs (Ong'or, 2005). Interest in terms of control and use of water for different purposes such as: agriculture, domestic water supply, waste disposal, industrial use, transport and energy differ among different categories of individuals (Khwaja, 2004). Therefore, benefits and costs of water use must accrue equitably to all groups of society. This is only possible if all groups are involved and their voices heard. It follows, therefore, that effective integration of women in water management will to a larger extent result into effective solutions because they are the largest category of water users. This study sought to analyze the level of gender participation in management of water projects as women have significant years of experience in managing community water projects.

2.5 Gender Roles and Water Management

Watershed management programs cannot be successful if gender relations are not considered. Therefore women and men should be equal and active partners in watershed management. Women and men have different roles in water resource management.

2.5.1 Gender Triple Roles

According to GWA (2006) in order to understand gender the activities of men and women need to be addressed in-terms of reproductive, productive and social/community roles women are playing as well as the roles played economically and socially by men. By examining the men's roles and women's role a greater understanding of their needs and involvement in

power and decision making around water resource management projects will be clear. Work can be divided into three main categories and women's roles mostly revolve around these categories: productive work which involves the production of goods and services for consumption and trade. Both women and men can be involved in production activities but their functions and responsibilities differ from those of women. Women's productive activities are often less visible and e valued than those of men. Reproductive roles involves the care and maintenance of the household and its members including bearing and caring for children, food preparation, water collection, shopping, housekeeping and family health care. Reproductive work is critical to human survival but it is seldom considered always the responsibility of women and girls (Majory, 2009).

Community work involves the collective organization of social events and services, ceremonies and celebrations. It also involves local political activities, community improvement activities such as digging trenches during water connections and provision of labour in construction of water storage tanks in the community water supply projects. Both women and men engage in community activities although a gender division always prevails in these activities (Lachapelle, 2008). The roles of men are more visible than women because they are paid for their productive work while the women roles are taken for granted and given little recognition. Policy makers have assumed that women are more or less concerned with management of water for domestic uses and men for productive use (UNDP, 2014). In order to ensure efficient, equitable and sustainable water use for agricultural production and domestic use, policy makers need to put into consideration all the uses and users into account during water supply allocation.

In Kenya, women have traditionally played key roles in decision making on the use and management of traditional water sources. In the cultures of the rural communities there is a very strong correlation between type of work and gender (Ravinder & Narayana, 2007). The division between the roles of men and women is such that technical positions are occupied mainly by men. Women do the clerical jobs which have very low degree of decision making power (Ong'or, 2005). Very few women participate in skills training because of social resistance from men. Even though the women perform the same tasks as the men and sometimes do so better than the men they do not always feel they are doing the right thing. According to Ross (2009) women play very little roles in the implementation of the water projects as well as in the design, training and maintenance of water resource projects. It is

important to note that men, women and children have quite different needs and perception about water and sanitation services impacting on development of water resource projects initiatives differently (Suda, 2000). Community participatory approach should be used in water resource management in order to ensure equitable involvement of both women and men hence the current study examined the situation in the study area.

2.5.2 Gender Division of Labour in Water Management

Alouka (2006) defines gender as the social and cultural construct of roles, responsibilities, attributes, opportunities and benefits between women and men, boys and girls in a given society. Gender division of labour are acquired behaviors that change over time as circumstances force communities to adapt to specific situations by changing gender roles. According to Eveline and Bacchi (2005) it is important to consider gender division of labour during project implementation, operation and management. Therefore gender division of labour should take into account the different roles that women and men assume within a household and in the community level. The gender division of labour should be linked with the tasks allocated to men and women in project implementation, operation and management (Alouka, 2006). However, men's perspective knowledge and needs in water management tend to be considered whereas the women are overlooked.

The division of water use into household and productive use has brought about the assumption that women's strategic interest in water is concerned with supplying clean and adequate water close to the homestead for their domestic responsibilities (Kulkarni, 2011). In majority of the cases, this assumption is certainly invalid because women take part in various activities such as agricultural production which has direct economic benefits for themselves, their families and their respective communities as well (Suda, 2000). Therefore, gender differences and inequalities should be taken into account if water project planning, implementation and operation in order to achieve the long term goal of promoting gender participation. Another facet of women's participation in watershed management is associated with the management of operations and maintenance of water sources. Women have shown initiative in taking charge of managing communal water facilities such as boreholes. This depicts the need for women's involvement in water management for an improved water supply.

2.6 Level of Education and Water Management

Difference in academic achievements between men and women is a key contributor to inequality in rural women's access to other resources. According to UNESCO (2013) women's education is important for positive outcomes in water resource management. Education is critical for female and male empowerment. Women and men must have at least basic education if they are to participate actively in management of water resource projects and economic activities (Ellis & Cutura, 2007). Education is one of the significant factors affecting the participation of women in water resource management. According to Manji and Arnold (2015) education is one of the important factors that help development to be realized. Secondly, education enhances active participation in innovation and the development of new knowledge in water management. In Africa, female illiteracy rates were over 60 percent in 2012 compared to 41 percent of men. Certain countries have extremely high rates of low education on women, Burkina Faso at 91 percent, Sierra Leone 88.7 percent, Chad at 82.1 percent and Guinea at 86.6 percent (Manji & Arnold, 2015).

In most African societies, women are seen as the collectors, managers, and guardians of domestic water. Because of their traditional gender roles girl child and women tend to utilize sixty percent of their time collecting water each day. This in turn translates collectively to approximately 200 million hours globally per day reducing the time available for education of the girl child and women participation in public forums (Clever & Hamada, 2010). The detriment water scarcity has on educational attainment for girl child and women, in turn affect earnings, management position and working opportunities. As a result of this, majority of women are unable to hold management position in public domain and especially in water management projects. The number of potential school days and education opportunity lost hinders the girl child and women out of the cycle of unequal opportunity for gainful employment, which in turn propagates gender inequality in participation in project management (GEF Report, 2008).

Women have less access than men to written information because of the lower proportion of literate women and lower knowledge of official languages (Wambu, 2012). As a result the knowledge and expertise in management of water projects between men and women differs. Projects which assume that information and communication with women can take place through men do not recognize that in many cultures communication differs in terms of

communication channel which in turn influence flow of information and consultation with women will not take place (Roshini & Linda, 2009).

According to UN Women (2011), lack of education and training has been identified as a key barrier to women's advancement in the society. A study conducted by World Bank (2009) reveals that illiteracy is a major constraint facing women in management. Most women are unable to understand and utilize technical information because they lack basic formal education. According to Manji and Arnold (2015) education has a relationship with water resource management. The reason is that there is a positive correlation between education and management skills. In addition, as noted by USAID (2011) education plays a significant role in positively influencing the status of women in management decision-making. Highly educated women are likely to make a higher contribution to decision making than uneducated ones (Gunduz, 2011).

Lack of education also affects the reception of services such as extension and influence uptake of innovations which may be slow among the less literate populations in society (UNESCO, 2013). As a result, of high illiteracy rates among rural women in Kenya, women participate minimally in water management responsibilities as the activities demand more skills and more extension services. Another facet of women's participation in watershed management is associated with the operation and maintenance of water sources. Women have also acquired invaluable knowledge, experience and skills of fetching, handling and use of water resources through their daily roles and responsibilities within the household. Zwarteveen (2008) acknowledged that women are knowledgeable on available water sources across the contexts of household and community. However, the question of gender disparities in the management structures of water projects has received little attention, despite the fact that there is recognition in education of both the importance of equal opportunity and the strengths that women bring to management (Fitzgerald, 2010).

The 1995 Declaration on Gender Equality and Development by United Nations (Beijing Declaration, 1995) guarantees equal opportunity to women and men in accessing management positions (Moser & Moser, 2005). Additionally, the 4th World Conference on Women (Beijing Declaration, 1995) called for governments worldwide to create a gender sensitive education system in order to ensure full and equal participation of women in educational administration, policy and decision making. This declaration was to be achieved

by 2005 but it has not been met, except in South Africa and Mozambique (Moser & Moser, 2005). It was therefore necessary for an investigation to be undertaken into the factors that hinder women's access to management positions in water resource management projects.

2.7 Land Tenure and Water Management

Access, control and management of water by both women and men is commonly influenced by access to land; the two are often linked (Watson, 2006). Securing access to land among women and men can lead to securing water rights. In most African communities, women's access and control over land is limited. This is because land tenure systems in many parts of Africa grant rights to own and dispose of land to adult males (Kabane, 2010). Land tenure systems determine who can use what resources for how long, and under what conditions. Land tenure is multi-dimensional and ought to bring into play social, technical, economic and institutional aspects into account. In Kenya there are tremendous societal differences on issues concerning land tenure. Most of the land rights are bestowed to men in most patriarchal societies in Kenya. Even in matrilineal societies such as in western Ghana, women do not possess inheritance rights (Kachika, 2009). Land is transferred from a deceased man to his brother or nephew (sister's son) in accordance with decision of the matrilineal clan (Ross, 2009).

Land adjudication and environmental issues and especially conservation of water towers, are of great importance in Kenya (NEMA, 2007). With increase in population and need for agricultural land wetlands and riparian areas are adversely being destroyed to accommodate human settlement and farming. These have led to reduced water levels in rivers, lakes and underground water tables. Currently, there are concerns in Kenya to reclaim, rehabilitate the wetlands and riparian areas for sustainable management of water resources and biodiversity (Jenkins & Riegels, 2006). Land ownership in rural areas determines the asset for production as well as access to water resource and the social power to negotiate for membership and decision making positions in water resource management.

In Kenya, most communities have customary laws that hinder women to access and control land independent of their husbands or male relatives. In Kenyan communities women provide labour for agricultural production but do not make major decision concerning land use (Kulkarni, 2011). In many communities, land defines social status and leadership position in decision-making in the village and structures relationships within and outside the household

(Lachapelle, 2008). Yet for most women, effective rights in land remain elusive, even as their marital and kin support erodes and female-headed households multiply. Management of water resources is linked with land tenure and this affects gender participation and often women are excluded from decision-making processes in water management and hence women have no choice in the kind of policies formulated or services they receive (Kabane, 2010). Land tenure in Kenya encompasses individual, private property, group property, state property and land held in trust by the state. The Kenya land act does not exclude women from being title holders and uses gender neutral words like proprietor (Lelo, Chiuri & Jenkins, 2006). However the land tenure reform has affected women's land rights. These reforms intervened in a context where customary law was evolving towards increasing individualization with an erosion of women's customary land rights.

In this context the implementation of the land registration programmes carried out in a period in which gender was not in the development agenda accelerated the individualization process and further curtailed women's land rights. Moreover, although all land rights including under customary law, had to be recorded during adjudication (land adjudication act sect 23) adjudication committee lacked skills and time to do so (Fitzgerald, 2010). Registration was usually made to male households heads thereby undermining women's unregistered secondary rights. On the other hand some women gained from registration for instance, widows sometimes registered land in their name instead of returning it to the dead husband's family under customary law (FAO, 2010). In addition, the establishment of a gender neutral land market has enabled women to purchase land on a formally equal position to men abolishing customary limits to women lands rights. Indeed there are reports of women who have purchased land, both as individuals and in groups and registered it in their name (FAO, 2010). However, women's constrained access to capital (credit, employment in the formal sector) limited their ability to gain access to land through purchases (Muiru, 2012).

The land rights of many rural women in Kenya are limited. The extent of these rights is determined by the interplay of customary and statutory law. Customary rules are invoked by women to challenge registration benefiting exclusively men, and by men to limit the rights acquired by women under statutory succession law (FAO, 2010). Watson (2006) reported numerous examples of violation of women's rights in access to land including inheritance practices discriminating against daughters, constraints in women access to land after separation or divorce and customary practices such as wife inheritance and cleansing, the

longer-term union and the one-time sexual encounter respectively between a widow and a male relative of the deceased as a condition for the widows continued access to land. Water rights are linked to land tenure. Under section 27(a) of the registered land act registration vests in the titleholder not only absolute ownership of the land but also rights appurtenant thereto, includes water rights (Onyango, 2012). Under the water act (2016), water ownership is vested in the state, and individuals can only have usufruct rights obtained through a permit issued by the competent ministry. However, it is usually landowners that apply for permits for irrigation purposes and some domestic uses by riparian landowners do not require a permit. Therefore, the gender biased land distribution entails unequal water rights.

In some cases, discrimination is directly or indirectly entrenched in statutory norms. This is particularly the case in the area of family and succession law. For instance, direct discrimination in inheritance rights has been documented as many land redistribution programmes have mainly benefited men, by including requirements discriminating against women either directly or indirectly and by issuing land titles in the name of the household head only (Kabane, 2010). In some cases women's rights are curtailed by the interaction between norms of different cultures that coexist in a context of legal pluralism (customary and statutory law) for instance the Kenyan land registration programme strengthened the land rights of male's household heads and weakened women's customary land rights (Sihanya, 2012).

The communities living in Njoro sub-county have diverse cultural practices, land use and water utilization. They also have different histories of settlement along the water shed. On the upper side of the Njoro watershed, the Ogiek are settled in the indigenous forested zone and are traditionally hunters and gatherers but have recently begun to settle in the Mau forest (Jenkins, 2008). According to Jenkins and Riegels (2006) the newly arrived and settled Kalenjin groups are mixing with Ogiek. These give way to mixture of older Kikuyu, Ogiek and Kalenjin residents in the upper zone. Mixed groups of people from different parts of Kenya, some living in urban centers and owning farms along the River Njoro occupy the lower zone of the watershed (Daniels & Bassett, 2002). Changes in women's legal rights for example, to hold title to land, to inherit, to be represented in land transactions do not necessarily yield the desired results unless linked with strong advocacy for positive and sustained results on land ownership. The current study provided the link between land tenure and participation in management of water user's association projects in Njoro sub-county.

2.8 Key Legislations and Policies in Water Resource Management in Kenya

The Republic of Kenya has committed itself towards sound management and sustainable utilization of water and environment resources for the present and future generation. This has called for reforms in the water sector. The government has evaluated and formulated water legislations to be in line with regional and international arrangements related to water resources management. For this study, three key documents were chosen for analysis this include: the Kenyan Constitution (2010), the National Water Policy (2012) and the Kenya Water Act (2016).

2.8.1 The Kenyan Constitution (2010)

The Constitution of Kenya (CoK) (2010) recognizes equality in gender participation. Kenya is a signatory to the Beijing Declaration and Platform for Action, the Universal Declaration of Human Rights and the Solemn Declaration on Gender Equality in Africa (Moser & Moser, 2005). These international, regional and sub-regional instruments are all meant to uphold the principle of equal gender participation. Kenyan government has over the years attempted to attain equal gender participation in public institutions (Nyanjom, 2011). Recognizing the importance of equal gender participation, the Constitution of Kenya 2010, domesticates the government efforts to safeguard human rights and fundamental freedoms and entrenches the concept in article 81 (b) that not more than two-thirds of the members of elective or appointive bodies shall be of the same gender. In article 27(8) of the constitution the requirement is that the government shall take measures and legislative reforms to implement the rule of not more than two-thirds in elective posts in public institution shall not be of the same gender. The CoK espouses the rights of men and women should be equal in all legislation and both genders should have equal opportunities in the social, economic and political spheres. In the Article 81 (b) infers to the general principles of the Kenya's electoral system shall comply with the principle of (b) not more than two-thirds of the members of elective public bodies shall be of similar gender. Article (27) obligates the state to develop and pass legislation's and laws, including affirmative action policies and programs to address the past injustices and discrimination on women and the minority in the society (Republic of Kenya, 2010).

The new constitution promotes gender equality and equity, including cultural diversity. The Constitution reflects a widely held belief that guarantees of equality, equitable distribution of

resources and balance of power represent in the best way to reduce the influence of ethnicity on political decision-making and thereby secure a peaceful future for the country (Onyango, 2012). On one hand, the new constitution provides a legal framework for combating discrimination. Deriving from the constitution, a national cohesion and integration policy was enacted to deal with difficulties in enhancement and implementation of the national cohesion and integration. The Constitution obliges the government to ensure that the minority, marginalized groups and gender are provided with equal opportunity for representation in governance, and to provide access to employment and special opportunities in education, land rights and economic fields (Nyanjom, 2011). Effective implementation of constitutional provisions is expected to diffuse the grievances of marginalization of women and men in leadership and management of projects and programmes for sustainability.

2.8.2 Kenya Water Act (2016)

Kenya Water Act was enacted in 2002 and ratified in 2016 as the legal framework under which water management was separated from water supply delivery services (Republic of Kenya, 2016). The Act has introduced comprehensive and radical changes to the legal framework for the management of the water sector in Kenya. The overall goal of the Act is to decentralize water management in order to ensure community participation and hence increase ownership of the water projects. The Act is structured around the following themes: decentralization of water resource management from the provision of water services; separation of water legislation formulation roles from water operation and administration activities; decentralization of functions to lower level state organs; and the involvement of other entities in the provision of water services (Nyanjom, 2011).

The Act also delegated responsibilities for water resources management and water services provision to local level functions. This has, notably, been the principal mechanism for improving accountability and transparency in the water and sanitation sector (Nyanjom, 2011). Another key element is that the Act address financial aspects of the water sector and established the Water Services Trust Fund (WSTF) to channel government resources and donor funds for water supply to disadvantaged communities. The Act introduced new government water institutions with clearly defined roles and responsibilities (NEMA, 2007). It stipulated that overall responsibility for water management, including policy formulation, coordination and resource mobilization, lies with the Ministry of Water and Irrigation (MWI).

The Water Services Regulatory Board (WASREB) was also set up to regulate water and sewerage services, including licensing, quality assurance, and setting water tariff guidelines, and handling public complains on water service provision (Republic of Kenya, 2016).

The Act also provided for establishment of a further eight Water Service Boards (WSB) to be responsible for the efficient and economical provision of water and sewerage services within their area of jurisdiction. However, water service boards have transferred the role of water provision to water service providers who may be community groups, church organizations or other entities established by local authorities. The Water Resources Management Authority (WRMA) was created as a semi-autonomous institution responsible for managing, protecting and conserving water resources. The Authority is also in charge of developing principles, guidelines and procedures for the allocation of water resources. The Act recognizes the importance of public participation and provides for decentralized and stakeholder involvement by creating the Catchment Area Advisory Committees (CAAC) to support the WRMAs at the regional level. At the grassroots level, stakeholder engagement will be through Water Resource User Associations (WRUAs).

2.8.3 The National Water Policy (2012) in Kenya

The main objective of the National Water Policy (NWP, 2012) is to develop a comprehensive framework for sustainable water resource management in the country. The policy aims at ensuring that beneficiaries participate actively in community based domestic water supply schemes. Additionally, this policy seeks to address cross-sectorial interests in water, watershed management and integrated water resource management. Also, the policy lays a foundation for transfer of roles and responsibilities from the National level to the water user's association projects in the grass roots level.

Gender can influence water policies in two fundamental ways: First, there are policies relate to the sustainable management of water resources and commonly rely on a broad base of stakeholder participation and consultation (NEMA, 2007). Therefore, the diverse roles of men and women in the control and management of water resources should be viewed as separate entities consequently match various policy goals and objectives accordingly. Second, the development of water resource management policies can have differentiated impacts on women and men (NEMA, 2007). As such, gender sensitive water policies should be clear on ways to protect the rights of both men and women in respect to the manner water resources

are used and allocated. Thus, the incorporation of a gender perspective will aid in addressing issues of water accessibility as well as protecting the livelihoods of the men and women who depend on water resources.

2.9 Theoretical Framework

This study was based on culture theory which explains why society propagates patriarchy (male domination) in public forums and community participation theory which focuses on the need for community participation in management of water projects.

2.9.1 Culture Theory

The main proponents of culture theory are Williams and Thompson (1896). Williams's emphasis on culture as a 'whole way of life' and Thompson's emphasis on culture as the way in which groups 'handle' the raw material of social and material existence opened up new ways of thinking about culture in particular. Both Williams and Thompson studied the lived dimension of culture and the active and collective process of fashioning meaningful ways of life. Culture theory may view organizational life as too unique. Organizational cultures differ because the interactions within those cultures differ, so generalizing about life in organizations is nearly impossible. Culture theory was advanced by cultural anthropology, especially from the work of Mary Douglas. According to Douglas (1983) culture theory maintains that in every society, several biases exist, some of which have pronounced effect on the rate of social change.

Thompson et al. (1990) claim that their cultural theory is universal. He argue that distinctive sets of values, beliefs and habits (in nations, neighborhoods, tribes and races) are reducible to only a few cultural biases and preferences". Cultural theory is one of many approaches that have been used to cope with the subjectivity inherent in analyzing long term global change. The Thompson et al. (1990) cultural theory represents a realistic model of the richness, diversity, and complexity of universal cultural underpinnings. When the Thompson et al. cultural theory is explicitly put in to integrated assessments of the community few mechanisms are put in place to critique good cultural theory from bad cultural theory, and good implementations of cultural theory in integrated assessment models from bad implementations of cultural theory. Culture theory starts with the assumption that individuals within a society have very different norms values and customs on how the society is supposed to be. Different ethnic groups have different 'cultural biases' or 'ideologies', which

are socially created (Zwarteveen, 2008). These ideologies determine people's understanding of the world.

The cultural code sets the frame work within which structures of inequality are legitimized and transferred from one generation to another (Poku, 2006). According to Razavi and Miller (2007) a male-dominated culture underpins the socialization process making women subordinates over men. While women have equal rights as men over access and control of resources in reality customs often prevent women from taking *de facto* control of land and natural resources such as water (Ross, 2009). The culture theory in this study is relevant as it helps to depict cultural biases on issues such as education, land tenure and gender roles. In this respect culture theory enforces maintenance of status quo in socio-cultural issues concerning management of water projects. This theory did not explain how community participation could influence gender participation in management hence their was need to bridge the gap by use of community participation theory.

2.9.2 Community Participation Theory

The main proponent of community participation was Arnstein (1969). The particular importance of Arnstein's work stems from the explicit recognition that there are different levels of participation, from manipulation or therapy of citizens, through to consultation. The most important process in any development project is the encouragement of the active participation of the local community. Without community participation it is not possible to have sustainable management of water projects. Since Arnstein, increasingly complex theories of participation have been advanced. In particular, there has been a shift towards understanding participation in terms of the empowerment of individuals and communities. This has stemmed from the growing prominence of the idea of the citizen as consumer, where choice among alternatives is seen as a means of access to power. Under this model, people are expected to be responsible for themselves and should, therefore, be active in public service decision-making. The United Nations Economic and Social Council Resolution (1929) defined community participation as process which entailed voluntary or democratic involvement of the citizenry in: (1) contributing to the development effort, (2) sharing equally the benefits accrued from the process, and (3) decision-making in respect of setting goals, formulating policies and planning and implementing economic and social development.

According to Aluoka (2006) community participation approaches in water resource management is important to enhance the sense of ownership among members. This is important in ensuring that water projects are operated and maintained after the implementation phase. Community participation theory assumes that the higher the community participation in a decision, the less the likelihood of interferences of external organizations on that decision. In this theory focus is given on the participation of beneficiaries and not that of personnel from the implementing agencies in development projects (Khwaja, 2004).

The theory asserts that women improve their position relative to men in ways that are beneficial to the community and that the state's role is to provide social services that promote women's emancipation. In this theory, women are focused as a source of social change rather than passive participants of development (Major, 2009). It advocates for the local, equitable participation of men and women in processes of decision making that concern development. It is in the interest of this theory that women's legal rights should be strengthened and that the existing power relations in society should be eliminated to increase women participation in water management. It exposes and challenges the gendered power relations that perpetuate inequities. The aim is to understand the dynamics of gender relations in community participation contexts and thereby to identify women's bargaining position and formulate strategies to improve women participation.

2.10 Conceptual Framework

The conceptual framework represented by figure 1 illustrates the relationship between socio-cultural factors that affect gender participation and other key aspects such as government policies on water management of the study. Socio-cultural factors which include land tenure, gender roles and level of education can have negative or positive effects on men and women in management of water projects. These factors are enshrined in the social systems and are naturally adhered to by most communities thus affecting women participation in water management than men. Such socio-cultural factors have strong ties with natural resource planning and management in a way that they influence attitude, practices, equity, equality and social cohesion.

Gender participation focuses on women and men involvement in decision making and leadership positions to safeguard their interests in water project management. For instance, men's and women's participation in community water projects decision-making spaces and management is draw from Alouka (2006) typology of participation. The typology distinguishes different levels of participation, from passive participation, i.e. being informed of decisions at meetings, to interactive participation, where one can have a voice on the decision made and/or hold a position in local decision making. Alouka identifies the following forms of participation: nominal, passive, consultative, activity-specific, active and interactive (empowering) participation.

In analysing men and women's participation, the study focus on gender relations and arenas. Gender relations are the socially constructed practices that manifest themselves in the division of labour, roles, responsibilities and resources between men and women, based on attitudes, perceptions and behavioural patterns (Clever & Hamada, 2010). The gender arenas in this study include the household, the domestic setting in which water is needed, used and managed, and the community, in which water schemes are governed through community water management committees. When gender participation is integrated in any development project, it tends to overcome the socio-cultural claims because of the knowledge, skills and the visible tools of power associated with such projects are understood by all project members.

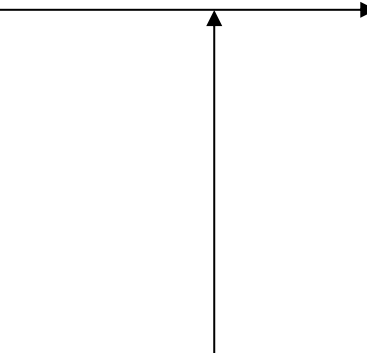
Change on how land tenure is transferred to members of a family, gender roles, level of education are critical inputs in changing attitude and addressing socio-cultural claims. This further fosters decision making and equal participation in water project management. Men and women's involvement in community water management is connected through the linkages between the policy frameworks that create the 'invited' decision-making spaces and the social-cultural environment that dictates access and performance in those spaces. This interconnection implies that changes in the formal structures have a bearing on the informal structures and vice versa. The intervening variables were controlled by selecting a study population that have similar characteristics in this case connected with water in their household/plot during the time of study and had gender policies in water management. When gender participation in watershed management is nurtured, sustainable natural resource, management is realized in addition to food security, strengthens collective action, economic independence and all this results into sustainable water project management.

INDEPENDENT VARIABLES

- Two-thirds gender rule**
 - Operationalization of two-thirds gender rule in the project by-laws
 - Domination of leadership by more than two thirds of either gender
- Land tenure**
 - Individual ownership
 - Communal ownership
- Gender Roles**
 - Community managing work
 - Productive roles
 - Reproductive roles
 - Labour division
- Level of Education**
 - Level of education
 - Experience in management of water projects

DEPENDENT VARIABLES

- Gender participation in management**
 - Level of representation in decision making.
 - Leadership roles.
 - Level of participation in operations



- Water legislations**
 - Government policies on water management.
 - Financial status
 - Organizational politics

INTERVENING VARIABLES

Figure 1. Interaction among Socio-cultural Factors and Gender Participation in the Management of Water Projects

Source: Own Conceptual Model

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section is concerned with the description of the procedures followed in conducting the research. It gives a summary of the whole research process, and includes: research design, the study location, the study population, sampling procedures, sample size, the instruments used in collecting data, validity and reliability of the research instruments, data collection and procedures used for analysis of the data.

3.2 Research Design

A research design is an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance with the purpose of the research; it constitutes the framework and the conceptual structure within which research is conducted (Kothari, 2003). It describes the procedure for carrying out data collection in an attempt to answer research questions. It describes the procedure for carrying out the study in terms of when the study was done, the nature of subjects of investigation, methods of data collection and the conditions under which the study was carried out. This study used *ex post-facto* research design. The research design is appropriate to behavioral science as independent variable cannot be manipulated (Orodho, 2003). *Ex post -facto* research design is a system of empirical inquiry in which, the researcher does not have direct control of independent variables because their manifestations have already occurred. The design therefore made it possible for the determination of the existing state of affairs (level of gender participation in management of water projects in Njoro sub-county) since the independent variable had already occurred socio-cultural factors (level of education, gender roles and land tenure).

3.3 Study Location

The ideal setting for any study should be easily accessible by the researcher and should permit instant rapport with the key informants (Mugenda & Mugenda, 2003). This study was carried out in Njoro sub-county which is located in the greater Nakuru county on the eastern edge of the Mau Forest Complex, the largest single forest block in Kenya. Njoro sub-county is situated between 35° 28' – 35° 36' E longitude and 0° 13' – 1° 10' S latitude. It also stands at an altitude of 1,800 m (6,000 ft) above sea level. Temperatures range between 17–22° C, while the average annual rainfall is in the region of 1,000 mm. The sub-county has five administrative divisions (Njoro, Lare, Kihingo Mauche and Mau-Narok). In 2009, the

population of Njoro Division was 87,489 (Sub-county Development Plan, 2014). The main livelihoods of the people of Njoro sub-county are saw-milling, cattle-keeping and farming. In the past, the land was covered with forests but due to the expansion of agriculture and the general population growth, these have receded. Residents of Njoro sub-county depend on multiple sources of water, because no one source is completely reliable (Jenkins & Riegels, 2006). Households which have piped water draw it from Nakuru rural water and sewerage company, church water supply, community bore hole, wells and harvest rainwater. Residents who live near the Njoro river draw water from it.

There are few rivers and some of them dry up during severe drought. Contaminants stemming from agricultural activities, grazing, and cottage industries contribute to the degradation of the boreholes and wells. The residents of Njoro initiated the Njoro Community Water Projects (NCWPs) after experiencing water shortage for many years (Jenkins & Riegels, 2006). The goal was to secure safe and sustainable water supply systems. Management of the projects required: Choice of appropriate technology; ability to pay for the water; capacity to operate and maintain the water supply system; involvement of women in management; ability and willingness to form a community water supply group; poverty alleviation and sanitation issues. Njoro sub-county was selected because of its uniqueness as it is characterized by various ethnic communities that manage and utilize water differently based on gender, in which social norms and cultural values provides a framework within which men and women participate in management and utilization of water resources. The map of Njoro sub-county where the study was carried out is indicated in (Appendix A).

3.4 Population of the Study

Target population refers to all the members of a real or hypothetical set of people, events or objects to which a researcher wishes to make generalizations on the findings of a research study (Mugenda & Mugenda, 2003). According to Creswell (2007) generalization of research findings to the target population largely depends on the degree to which the sample, accessible population and the target population are similar on salient characteristics. The target population of this study was all eligible registered members in the water projects who had land ownership rights and had paid membership fee. They were about 7,230 in all the 38 registered water projects in the sub-county. However the accessible population for this study was project members who were connected with water in their households/ plots during the period of study and were about 3,556 members. The study sampling frame was drawn from the accessible population in the three categories of project management (church, community

and NARUWASCO) in the sub-county. Because of time constrain, procedures of data collection and getting through the gatekeepers, it was not possible to involve all eligible members in the water projects. All the divisional water officers from all the four administrative divisions were included in the study. The distribution of project management categories, target and accessible population are indicated on Table 1.

Table 1

Target and Accessible Population per Category of Management

Category of Management	Total Number of Projects	Total number of registered members	Total Number of members connected with water
Community	32	5,980	3,126
Church	5	820	310
NARUWASCO	1	430	120
Totals	38	7,230	3,556

3.5 Sampling Procedures and Sample Size

Purposive and stratified random sampling procedures were used. Purposive sampling procedure was used to select 3,556 registered members who were connected with water supply in their households/plot during the period of study out of the 7,230 registered members in all the 38 registered water projects in the sub-county. The accessible population was obtained from the four administrative divisions in the sub-county in which the projects members had different social setup, gender and culture that affected gender participation in management of water projects. The formula by Creswell (2007) was used to determine the actual sample size for the study.

$$n = \frac{NC^2}{C^2 + (N - 1)e^2}$$

Where:

n = Sample size, N = Population, C = Coefficient of variation, e = Standard error.

C=30% was acceptable according to Creswell (2007) e = 0.02 and N = 3556.

$$n = \frac{3,556 \times 0.3^2}{0.3^2 + (3,556 - 1)0.02^2} = 211.666$$

Therefore, 212 respondents formed the sample size for the study. The four divisional water officers were included in the study. To ensure equal representation of each category of water management, stratified random sampling was used to select the respondents for the study. The starting point in applying the stratified random sampling was to determine the number of eligible participants in the study. The population was then divided into constituent subgroups (strata) according to management categories (church community and NARUWASCO) and the subjects selected from each subgroup using random sampling through the lottery method. The accessible population was arranged sequentially and assigned identifications corresponding numbers which were marked on separate tabs and put into a container. The numbers were tossed so that they are thoroughly mixed. Then one tab bearing a number was selected from the container, without the researcher seeing it until the required sample size was selected. This ensured that every individual had the same chance of being chosen. According to Creswell (2007) lottery method is applied to ensure that the sample selection is independent of human judgment. Table 2 show the distribution of accessible population and samples size selected.

Table 2

Distribution of Sample Size According to Management

Management Category	Accessible population	Sample Size	Proportion of Sample Size
Community	3126	186	88%
Church	310	19	9%
NARUWASCO	120	7	3%
Divisional water officers	4	4	
Totals	3,556	212	100%

3.6 Instrumentation

In this study several tools were used for data collection. A questionnaire administered on a face to face basis was used to collect baseline data from the eligible water project members. This was appropriate since questionnaires are used to collect basic descriptive information from a broad sample (Creswell, 2007). Each item in the questionnaire was developed to address specific research objectives and questions. The questionnaire was designed with

closed and open ended items capturing interval, ordinal and nominal data (see Appendix F). To clarify and confirm data gathered using the questionnaire, key informants interview was conducted. Interview schedule was used to collect data during the key informants interview (Appendix G).

3.6.1 Interview Schedule for Divisional Water Officers

Data from the divisional water officers was collected using interview schedule. The purpose of the interview schedule was to give the (key informants) divisional water officers and chairpersons of the water projects an opportunity to elaborate on some issues concerning selected socio-cultural factors influencing gender participation in water management projects. The interview schedules were administered to four (4) divisional water officers and chairpersons of the water projects to examine the in-depth issues surrounding the influence of selected socio-cultural factors on gender participation in the management of water projects in Njoro sub-county. The interview schedules had open ended items so as to solicit in-depth information concerning gender participation in management of water projects in Njoro sub-county. According to Creswell (2007) interview schedules have the ability to collect in-depth information from respondents who are well conversant with the subject issue under investigation.

3.6.2 Questionnaire for Respondents

The questionnaires were administered to the selected two hundred and twelve (212) registered members. The questionnaires were appropriate for the respondents as they saved time and cost of administering them. According to Creswell (2007) a questionnaire is a self-report instrument used for collecting information needed. A questionnaire assures a high response rate and minimum of bias, providing necessary explanations and giving the benefit of personal contact (Mugenda & Mugenda, 2003). Another advantage of the questionnaires is that data processing and analysis is cheaper. The questionnaire comprised of items developed by the researcher which captured all the four objectives. Some of the items had a Likert Rating Scale format. The major items in the Likert rating scale included those representing the level of agreement, that is, strongly disagree (1), disagree (2), undecided (3), agree (4) and strongly agree (5). Some of the items representing the extent, that is, very low (1), low (2), moderate (3), high/much (4) and very high/much (5) were also in likert scale. The questionnaire was structured to capture information according to sections. Section A; Demographic information, Section B Level of gender participation in management, Section

C; Influence of land tenure and gender participation in the management of water projects, Section D; Influence of gender roles in participation in the management of water projects, Section E; Influence of education in participation in the management of water projects.

3.7 Validity and Reliability

The instruments were piloted in Elburgon sub-county in Nakuru county which had similar characteristics with the study area in terms of management categories. Twenty one respondents (21) which is ten percent of the study sample size was selected. According to Kathuri and Pals (1993) ten percent of the total study sample size is appropriate for pilot testing. In research, the researcher must ensure that the data collected is valid and reliable (Mugenda & Mugenda, 2003). Reliability and validity therefore, are measures of this relevance and correctness. Each of these measures are discussed below.

3.7.1 Validity of Instruments

Validity, according to Bryman (2004) is the extent to which a test measures what it is supposed to measure. The most important types of validity which were considered in this study included; face validity and content validity. Face validity is the extent to which the items in a data collection instrument appear to measure what they purport to measure. It is a matter of judgment (Creswell, 2007). Content validity deals with the representativeness in a data collection instrument. This type of validity ensured that the items in the questionnaire and the schedules covered all the stated objectives. The study also sought the help of independent educational researchers in the department of applied community studies to improve both the content and face validity of the data collecting tools. Appropriate adjustments and corrections were done to the instruments to address any validity weaknesses.

3.7.2 Reliability of the Instruments

Reliability refers to the consistency of the results of measurements (Bryman, 2004). It is critical for the research findings to be reliable and this can be achieved by ensuring that the data collection instruments yield consistent information (Creswell, 2007). Reliability of the instruments was tested using Cronbach's Alpha test in order to establish whether they achieved a satisfactory level of acceptance. This study focused on a detailed description of indicators of selected socio-cultural factors influencing gender participation in water resource management projects in Njoro sub-county. The instruments were piloted in Elbergon sub-county to determine their reliability and validity. Elbergon sub-county was selected as it had

similar cultural diversity and different categories of water management (community, church and NARUASCO), which is similar to Njoro sub-county.

A sample size of 21 respondents (10%) of the main study population from the three main categories of management in Elbergon water project were selected to pilot test the instruments. This sample was stratified and randomly selected from a list of households in the three categories of management who were connected with water during the time of study. The instruments were tested for reliability using Cronbach Coefficient alpha to determine the internal consistency of the items. This method gives an estimate of reliability of test scores by use of a single administration of a test. From the pilot test results, a reliability coefficient of $\alpha=0.819$ was obtained. This was an indication that the instruments attained a reliability coefficient above the required threshold and were therefore considered suitable to give consistent results from various respondents.

3.8 Data Collection Procedures

A letter from post graduate school was sought in order to obtain a research permit from National Commission for Science Technology and Innovation (NACOSTI). A legal permit was obtained from the office of (NACOSTI) to conduct research in water projects in Njoro sub-county (Appendix H). Once the permit was obtained, introductory letters from the county director of education and county commissioner of Nakuru were sought. Thereafter divisional water officers were contacted and enabled the researcher to get intouch and familiarize with the chairpersons of the water projects. The chairpersons of the water projects provided the researcher with the register of all eligible respondents in order to generate the list of the participants. Using lottery technique the names of the participants were picked randomly in order to eliminate biasness. After the list was generated the chairpersons of the selected water project members invited the eligible participants for a meeting with the researcher. The chairpersons introduced the researcher to the eligible participants in their areas of jurisdiction who were briefed on the aim of study in order for them to make informed decision of either participating or not. Those selected and were not willing to participate were replaced with those who were willing to participate. The divisional water officers and chairpersons, were interviewed by the researcher using the interview schedule. The questionnaires were administered on a face to face basis to the selected respondents through the guidance of trained research assistants to fill them in order to deal with the problem of

illiteracy. The completed questionnaires were collected from the trained research assistants after a period of three weeks and 203 questionnaires were received back. This was about 95% of the response rate. Confidentiality of information was guaranteed to each respondent. The information that was collected from the respondents include; demographic information, level of gender participation in management, influence of land tenure and gender participation in management, influence of gender roles and gender participation in management, influence of education and gender participation in management of water projects.

3.9 Ethical Considerations

Before the start of the data collection session with the eligible respondents, the respondents were briefed on the aim of the study to avoid any misunderstanding that could crop up during filling of the questionnaires about the purpose of the research. The respondents participated at their own consent. During the entire study, confidentiality of the respondents opinions on selected socio-cultural factors influencing gender participation in the water projects was maintained. Where need a rose, respondents anonymity was guaranteed. Cultural values to particular ethnic group was respected. At the end of the study it is hoped that the results would be discussed with water project members.

3.10 Data Analysis Procedures

Data analysis was done based on the objectives and hypotheses of the study. Before the actual data analysis, questionnaires were checked to determine completeness. The data collected was analyzed using the Statistical Package for Social Sciences (SPSS) version 22 for windows and STATA version 8. SPSS was appropriate for descriptive statistics due to ease of manipulation of data and STATA for inferential statistics which generated better ordered logistic regression output. Data from the questionnaires was segmented into demographic, level of gender participation, level of education, land tenure and gender roles. The data was analyzed using descriptive statistics including means, percentages, frequencies and standard deviations. Descriptive statistics provided an opportunity to increase the understanding of gender participation in the management of water projects. Inferential statistics specifically ordered logistic regression test was employed in the analysis of the findings. Ordered logistic regression was used to model ordered categorical response variables and only applies to data that meet the proportional odds assumption. The model fits logistic regressions on a multi-

category ordered response variable that has been dummy coded. The response variable Y is categorical response variable with K +1 categories: $Y = (0,1,2, \dots, K)$

$$Y = \begin{pmatrix} 0, \text{Low} \\ 1, \text{Medium} \\ 2, \text{High} \end{pmatrix}$$

The proportional odds assumption states that the number added to each of the set logarithms to get the next is the same in every case to form an arithmetic sequence the reference category is 2 = reference group and so non-reference K categories have a linear regression function with the regression parameters given as;

$$\beta_j = \beta_{1j}, \beta_{2j}, \dots, \beta_{pj} \text{ where } j = 0, 1, \dots, K$$

And a set of predictor variable vector with P predictor variables

$$X_i = X_{1p}, X_{2p}, \dots, X_{ip} \text{ where } i = 1, 2, \dots, n$$

The link function is a transformation of the probabilities that allows for estimation of the model, in ordered logistic regression the link function is the logit; the link defines what goes to the left side of the equation linking the random component on the left side of the equation and the systematic component on the right (Shakhawat, Ejaz & Hatem, 2012). The logit equations of the Ordered Logistic Regression model (OLR) form a comparison of the log odds of each of the non-reference K response variables to the categorical variable of choice. The logit equations is shown as:

$$\log \frac{\pi_1 + \pi_2 + \pi_3}{\pi_{j+1} + \pi_{j+2} + \dots + \pi_j} = \log \frac{P(Y = j/X_i)}{P(Y = 0/X_i)} = X_i \beta \tag{3.1}$$

The response probability are then uniquely determined and thus their summation is equal to one.

$$P(Y = 0/X_i), P(Y = 1/X_i), \dots, P(Y = j/X_i)$$

Where $j = 0, 1, 2, 3, 4$ and where $i = 1, 2, 3, \dots, n$

$$\sum_{j=1}^K P(Y = j/X_i) = 1$$

$$\pi_{ij} = \frac{e^{\sum_{k=1}^j X_i \beta_k}}{1 + e^{\sum_{k=1}^j X_i \beta_k}} \quad (3.2)$$

$$\pi_{ij} = \frac{1}{1 + e^{\sum_{k=1}^j X_i \beta_k}} \quad (3.3)$$

For a polytomous outcome Y , and P predictors $x_1, x_2, x_3, \dots, x_p$, the systematic part of the model is defined as follows:

$$\log \frac{P(x_1, x_2, x_3, \dots, x_p)}{1 + P(x_1, x_2, x_3, \dots, x_p)} = \beta_{0j} + \beta_{1j}X_{1j} + \beta_{2j} \beta X_{2j} + \dots + \beta_{pj}X_{pj} \quad (3.4)$$

This can be re-expressed in terms of the individual category outcome probability by solving for the unique probabilities to give:

$$P(x_1, x_2, x_3, \dots, x_p) = \frac{e^{(\beta_{0j} + \beta_{1j}X_{1j} + \beta_{2j} \beta X_{2j} + \dots \beta_{pj}X_{pj})}}{1 + e^{(\beta_{0j} + \beta_{1j}X_{1j} + \beta_{2j} \beta X_{2j} + \dots \beta_{pj}X_{pj})}} \quad (3.5)$$

For a given predictor X_i , the coefficient β_j gives the change in log odds of the outcome associated with a unit increase in X_i , for arbitrary fixed values for the remaining predictors $P(x_1, x_2, x_3, \dots, x_p)$. The exponentiated regression coefficient $\exp(\beta_j)$ represents the odds ratio associated with a one unit change in X_i (O'Connell, 2006).

Logistic slope coefficients is interpreted as the effect of a unit of change in the X variable on the predicted logit with the other variables in the model held constant. That is, how a one-unit change in X affects the log of the odds when the other variables in the model held are constant. The data is presented in a variety of ways that is easily understood. These include tables and figures. Table 3 provides a summary of the nature of data that was analyzed in each objective as well as the method of analysis that was used.

Table 3

Summary of Statistical Data Analysis

Research Objectives	Independent variables	Dependent variables	Method of data analysis
i) To establish the influence of two-thirds gender rule on gender participation in management of water projects in Njoro Sub-county.	Two-thirds gender rule <ul style="list-style-type: none"> Operationalization of two-thirds gender rule in the project by-laws Domination of leadership by more than two-thirds of either gender 	Gender participation in management <ul style="list-style-type: none"> Level of representation in decision making. Leadership roles. Level of participation in operational activities. 	<ul style="list-style-type: none"> Descriptive statistics Ordered logistic regression
ii) To establish the influence of land tenure on gender participation in management of water projects in Njoro Sub-county.	Land tenure <ul style="list-style-type: none"> Individual ownership Communal ownership 	Gender participation in management <ul style="list-style-type: none"> Level of representation in decision making. Leadership roles. Level of participation in operational activities. 	<ul style="list-style-type: none"> Descriptive statistics Ordered logistic regression
iii) To assess the influence of gender roles on gender participation in management of water projects in Njoro Sub-county.	Gender roles <ul style="list-style-type: none"> Labour division Community work Productive roles Reproductive roles 	Gender participation in management <ul style="list-style-type: none"> Level of representation in decision making. Leadership roles. Level of participation in operational activities. 	<ul style="list-style-type: none"> Descriptive statistics Ordered logistic regression
iv) To assess the influence of level of education on gender participation in management of water projects in Njoro Sub-county.	Level of Education <ul style="list-style-type: none"> level of formal education Expertise skills on water management 	Gender participation in management <ul style="list-style-type: none"> Level of representation in decision making. Leadership roles. Level of participation in operational activities. 	<ul style="list-style-type: none"> Descriptive statistics Ordered logistic regression

3.11 Description of Variables Used in the Study

The description of dependent and independent variables is given in Table 4. Selected socio-cultural factors are independent variables influencing gender participation in management and were measured as an observed response.

Table 4

Variables on Influence of Socio-cultural Factors on Gender Participation in Management of Water

Variable	Variable description	Measure	Type	Expected sign
Dependent variable				
GenderParticipation	Extent of participation by both gender in management of water projects	0= low, 1= Medium, 2=high	Ordinal	
Independent variables				
GenderPolicy	Two-thirds gender rule	Extent of compliance with two-thirds gender rule	Continous	+/-
Genderroles	Load in gender roles	Extent of involvement in community work	Continous	+/-
Education	Level of Education	0 = no formal education 1 = Primary 2 = Secondary 3=Tertiary/coll ege 4 = University	Dummy	+/-
Landrights	Land Tenure	0 = Communal 1 = Individual	Dummy	+/-

Gender participation (Extent of participation by both gender in management of water projects) measured as a categorical and ordered variable taking the values of 0 when the gender inequality was low, 1 when medium and 2 when high. According to WHO (2010), men dominate decisions making positions such as chairpersonship and office of treasurer and while women are almost always kept as ordinary members with no defined tasks. In many cases, gender relations and project procedures undermine women's chances to participate in discussions and decisions, in spite of their roles as users and managers of water (Katui-Katua,

2004). According to Vernooy (2006) the exclusion of women in decision making not only delays delivery of benefits, but also affects equity and institutional efficiency.

Gender roles (load in gender roles) measured as a continuous variable indicating respondents load in gender roles. This was measured through involvement of both men and women in gender related tasks which include (children rearing), reproduction tasks (household chores, cooking, washing and cleaning), income generating activities, provision of paid labour, provision of unpaid labour and community work (collective organization of social events such as ceremonies and celebrations). This generated a scale variable where zero (0) indicate the lowest load and six (6) indicating the highest load. According to Baker and Raney (2007) reproductive roles of women limit their participation in development programs. The distribution of household roles over burden women derailing their participation in community water management projects (Chan & Ng, 2013). Women persistently face more household demands and family responsibility a situation that reduces time available for work and participate in management of community projects (Baker & Raney, 2007). Men tend to make greater sacrifices at home in order to maintain their work responsibilities, whereas women do the opposite (Baker & Raney, 2007). According to Aikman and Unterhalter (2013) family-work constraints can lead women to pull double duty with home and work responsibilities, and in turn restrict participation in water projects rather than encourage it. Differences and inequalities in gender roles influence how women and men participate in and respond to new initiatives (FAO, 2010). Women have traditionally been assigned most of the domestic roles, such as cooking, disposing human waste and drawing water to the point that their public life is severely limited (Baker & Raney, 2007).

Education (highest level of education) measured as an ordinal variable (where 0 = no formal education, 1 = Primary, 2 = Secondary, 3 = Tertiary/college and 4 = University) showing the extent of formal education acquired by the respondent. According to World Bank (2009) illiteracy is a major constraint facing women in water resource management. Ross (2009) asserts that education plays a significant role in positively influencing the status of women in decision making at all levels of management. Highly educated men and women are likely to participate in water resource management than their uneducated counterparts (Gunduz, 2011). Education avails the necessary skills and understanding needed to participate effectively in water management leadership and policy-making at both local and national levels (Chovwen, 2007). Education is a vital tool in achieving greater autonomy, empowerment of women and

men and addressing gender gaps in the distribution of opportunities and resources (Aikman & Unterhalter, 2013).

Gender policy (two-thirds gender rule) measured as a continuous variable indicating the extent of non-deviation of two-thirds gender representation in the management positions. This variable was computed as a percentage. According to Sokile and Van Koppen (2004) most water projects in sub-Saharan Africa do not put into consideration gender issues since democracy involves free and fair electoral competition. According to Penceliah (2011) emphasis is put on voter's choice of leaders in the electoral process which indicates that other factors are never put into consideration during election of leaders in different positions. According to studies by Kabane (2010) men dominate public decision making bodies, leading to male values being reflected in decision making meetings and boards. According to studies by Hicks (2012) low representation and participation of women in water resource management is as a result of various socio-cultural factors.

Landrights (land tenure) measured as a categorical variable (with two possible outcomes) showing the extent of the rights to possess land. On one hand, a respondent could possess land individually while on the other hand, land could be possessed communally. Most women do not own land due to underlying strategic constraints caused by culture. According to FAO (2011) the exclusion of women and young men who do not own land in decision making affects equity and institutional efficiency in water resource management. Daley (2011) noted that water rights are often closely tied to land tenure arrangements and are often transferred with land. In many communities land rights are usually passed from father to son, thereby excluding women and translate to subsequent low participation in institutions (IFAD, 2014). According to International Land Coalition (2011) land influences the power structures relationship both within and outside the household. Land is the primary assets that dictate participation in water resource management. According to FAO (2012) globally, women own less than 20% of agricultural land and consequently are less involved in management positions.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

In this chapter research results and discussion are presented. The purpose of the study was to examine the influence of selected socio-cultural factors on gender participation in the management of water projects in Njoro Sub-county. The data was collected from two hundred and twelve respondents (212) and four (4) divisional water officers but only two hundred and three (203) questionnaires were returned back. This represents 95% level of response rate.

The study findings are presented and discussed in this chapter based on the four objectives:-

- i) To establish the influence of two-thirds gender rule on gender participation in management of water projects in Njoro Sub-county.
- ii) To establish the influence of land tenure on gender participation in management of water projects in Njoro Sub-county.
- iii) To assess the influence of gender roles on gender participation in management of water projects in Njoro Sub-county.
- iv) To assess the influence of level of education on gender participation in management of water projects in Njoro Sub-county.

4.2 Socio-demographic Characteristics of the Respondents

The demographic and socio-economic characteristics include; respondent's age, gender and household size.

4.2.1 Respondents' Age

The study findings show engagement of different age cohorts as indicated in Table 5 which show the age brackets of the respondents. The study results show both the young and old respondents were engaged in water resource management hence a great variation in household age data. The age of the respondents affects participation in management. Age influence responsibility and resource endowment, which in turn affect membership and participation in leadership position.

Table 5

Age of the Respondents

Age brackets	Frequency	Percent
21-30yrs	3	1.5
31-40yrs	11	5.4
41-50yrs	87	42.9
51-60yrs	88	43.3
61-70yrs	11	5.4
Above 70yrs	3	1.5
Total	203	100.0

From the study results majority of the respondents were of the age bracket between 41-60yrs, which is seen as the most productive age group both biologically and economically. This age bracket is more engaged in economic activities and family management as they own land and financial requirements for membership in the water resource management. There were very few young people in the age bracket of (21-30yrs) may be as a result of lack of landownership rights and any form of employment in order to generate income for registration in the water project. According to Hicks (2012) age influence acquisition of power and leadership position. Most African communities value age a prerequisite for one to hold leadership position. From the results of the key informants the reason why the respondents of the age bracket of above 70yrs were few was a result of transfer of land rights to the next of kin. This made the age cohort passive participants in water management as they depend on their children to make any payment in the water project.

4.2.2 Gender of the Respondents'

From the study findings both genders were involved in the study but majority were males. The results are summarized in Figure 2.

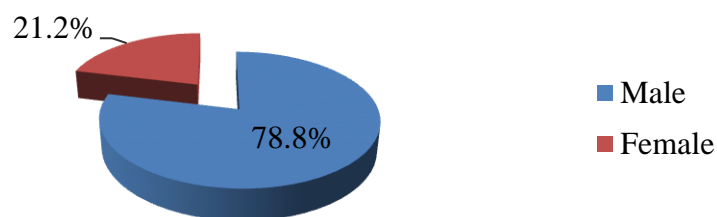


Figure 2. Gender of the Respondents

The study results indicate that more males (78.8%) participated in the study than females (21.2%). This is an indication of male dominance in water project membership and participation in management. This may have been contributed by the fact that most households are male household's heads and own land which is a key criterion for membership in the water projects. Gender representation in the water projects membership had a direct implication on the achievement of two-thirdss gender rule. Low representation of women in membership affected women during voting of leaders in management position as men were the majority and had a high chances than females to participate in campaing and electoral process. Anonymous (2012) indicated that community water projects have a mandate to ensure that community participation encourages women to participate in management of water projects. This is because women have a major responsibility of drawing water and yet they are usually not fully involved in management of water projects. Failure to in-cooperate more females in the project membership may contribute to failure of the water supply system. Global Water Partnership (2010) reported that the best managed water projects are those in which women play a leading role in management.

Water projects initiators should incorporate both genders to participate at the inception of the project in order to help in assessing the community water requirement and preference of the water supply system. Cha (2013) observed that in order to ensure that gender participation is incorporated in the whole process of establishment and operation of water supply system, participatory methodologies must be employed throughout the project development. Participatory methodologies help in the utilization of communities' knowledge about their environment. World Bank (2009) indicate that assessing of consumer preferences is one of the most neglected aspects of rural water supply and features more prominently as a reason for project failure. Only when both genders are actively involved in the decision making and selection of water supply system will ensure project ownership and sustainability. The danger for not involving both genders in the implementation of the water supply system is that community ownership of the water supply system is compromised. This leads to dependance of the project members on the project initiator to operate and maintain it for them.

4.2.3 Household Size of the Respondents

The study results indicate varied household sizes which are represented by Table 6. The size of the household depended on whether the family live as extended or nuclear family hence the variation.

Table 6

Size of the Household of the Respondents

Household size	Frequency	Percent
1-5	114	56.2
6-10	65	32.0
11-15	23	11.3
16-20	1	.5
Total	203	100.0

Some of the households were small size with (1-5) members and some were as large with (16-20) members. Some of the households were small in size as a result of migration of some members of the family to the urban areas where they are either working or searching for employment. The household size had an effect on water utilization as well as consumption. Large household size consumed more water than smaller household size. According to Cha (2013) household size may also have some impact on supply of labour in the water project activities especially in the initial stages of earth excavation and during laying of pipes for water supply.

4.3 Other Characteristics in Relation to Management of Water Projects

Other characteristics that are related to management of water projects includes: criteria for membership, duration of membership, type of water connection, amount of connection fee, uses of water supplied, period of registration, frequency of meetings and the time of the week in which meetings are held in the water project.

4.3.1 Criteria for Membership in the Water Projects

From the study results there were various criteria for membership in the water users association projects as indicated in Table 7.

Table 7

Criteria for Membership in the Water Project

Criteria for membership	Frequency	Percent
Landownership	203	100.0%
Membership fee	203	100.0%

All the respondents reported that the criterion for membership in the water projects was solely through landownership and payment of membership fee. Land ownership was highlighted as key for both women and men to participate as registered member and in management of the water project, other than payment of membership fee. Agarwal (2010) reported that though women are not the rightful land owners, accessibility to land has guaranteed them an opportunity to participate in water resource management. In most cases financial resources are a constrain to women as most of them lack a constant income. Majority offer unpaid labour in their farms hence depend on the households head so that they can make contribution in management of water projects. These conditions mean that women are mostly sidelined from being members of water project from the initial stages of planning, designing, implementation, operation and maintenance. The set precondition for membership deny women a right to participate in decision making thus increasing gender disparity in participation. USAID (2011) indicated that water rights are often closely tied to land tenure arrangements and are often transferred with land thus affecting women membership in the water projects.

4.3.2 Duration of Membership in the Water Project

The study sought to examine the duration in which the members have been registered in the water project which is summarized in Table 8.

Table 8

Duration	Frequency	Percent
0-5yrs	31	15.3
6-10yrs	56	27.6
11-15yrs	76	37.6
Above 16yrs	40	19.7
Total	203	100.0

From the study results it can be concluded that some water projects have been in existence for a long period (above 16 years), while others have been in existence for a short period of time (5years and below). The duration for membership may have been determined by the period in which the project has been in existence. The duration of membership could have differed as a result of difference in period of registration as some members were registered at the initial

stages of project planning and design, while others were registered after the success of the project to supply the water to individual households.

4.3.3 Stakeholders Involved in the Initiation of the Water Project in the Study Area

Figure 3 indicates the stakeholders involved in the initial establishment of the water project in the study area.

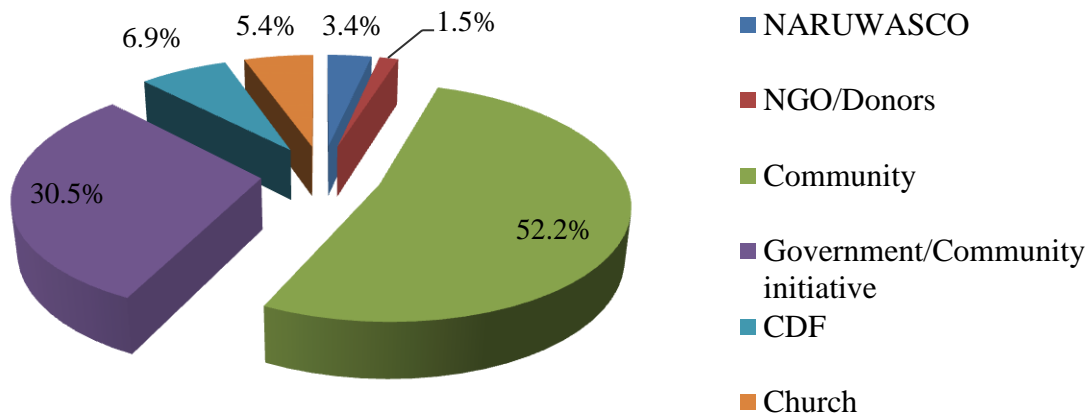


Figure 3. Initiator of Water Projects in the Study Area

From the study results there were several stakeholders who were involved in initial establishment of water projects which include; community initiatives, the government and community partnership through the ministry of water and irrigation, Nakuru Rural Water and Sewerage Company (NARUWASCO), church organizations, donors/NGOs and constituency development funds. All these stakeholders were aimed at providing timely delivery of water services to the community. In the study area communities had mobilized their resources to establish water supply systems as a result of compelling need for supply of water in the households and the increasing demand for clean and reliable water supply. The government through the ministry of water and irrigation and CDF have partnered with community members to delivery water supply services to the community at subsidized cost.

In the urban areas some respondents reported that services provided by NARUWASCO were inefficient as the water supply system was associated with illegal water connection and corruption. Some of the water board official’s collaborate with water vendors to deny some areas with water in order to create crisis and hence sell water at higher price. Katui-Katua (2004) observed that the church and the CDF form an alternative approach for water supply in the grassroots and are addressing community problems adequately but, these at times is bogged down by the politicians and church leaders interests that prevail upon local

community's interests. According to GWA (2003) it is argued that better management of water supply facilities could only be achieved if responsibilities are devolved from the central government to autonomous agencies. These limit the extent of political interference and allow water supply facilities to be managed according to efficient business practice. Gender and Water Alliance (2006) observed that community managed water projects are recommended to be more suited in providing rural water supply due to proximity to the consumers of the water. According to Aluoka (2006) in order to achieve sustainable rural water supply it is essential to build adequate capacity in particular at community level to ensure water projects are sustainable and deliver good service to the members.

4.3.4 Type of Water Management System Utilized by Project Members

From the study results there were different types of water management systems as indicated in Figure 4.

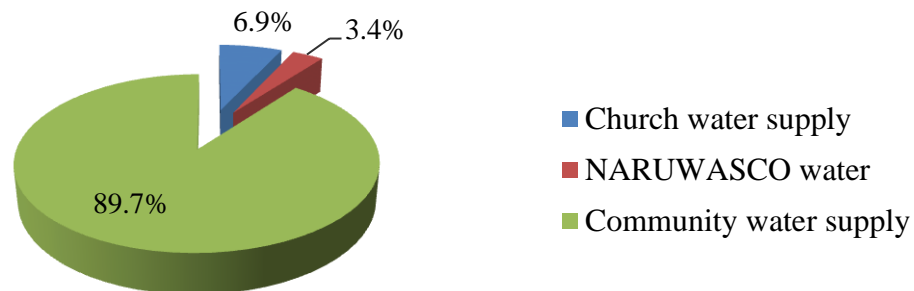


Figure 4. *Type of Water Management System*

The common management systems identified in the study area were; community managed water systems, church managed water systems and Nakuru rural water and sewerage water managed system. Majority of the water supply systems 89.7% were community managed this is an indication that the responsibility of rural water supply has been decentralized to the community level. This is a way of instilling responsibility to the people and ensuring a demand-driven and community-managed approach. The concept of community participation advocates for greater beneficiary involvement in water service production and management (Cleaver & Hamada, 2010). This involved beneficiaries taking the initiative to demand improved water services while at the same time taking a leading role in project design, implementation, development and sustainability. Khwaja (2004) observed that demand-responsive approach requires beneficiaries to own the system by constantly making meaningful contributions either in the form of cash or labor to community-based water projects. FAO (2012) observed that community involvement ultimately leads to better

designed projects, better targeted benefits and more cost-effective and timely delivery of water. Most significantly, community participation is seen as effective in terms of equitable distribution of water and in curtailing corruption. Decentralization of water management to the community level concurs with the enactment of water act 2016 which advocates for the shift of the regulation of water supply from the government to independent agencies.

Jenkins (2008) indicated that water act 2016 was introduced to bring about comprehensive and radical changes to the legal framework for the management of the water sector in Kenya. The Act is also structured around the following themes: decentralization of water resource management from the provision of water services; separation of water legislation formulation roles from water operation and administration activities; decentralization of functions to lower level state organs; and the involvement of other entities in the provision of water services (Nyanjom, 2011). The Act also provided for establishment of a further eight Water Service Boards (WSB) to be responsible for the efficient and economical provision of water and sewerage services within their area of jurisdiction. However water service boards have transferred the role of water provision to water service providers who may be community groups, church organizations or other entities established by local authorities.

4.3.5 Water Connection Fee Charges

Figure 5 presents the amount of money charged to members as connection fee. The fee differed from one project to another.

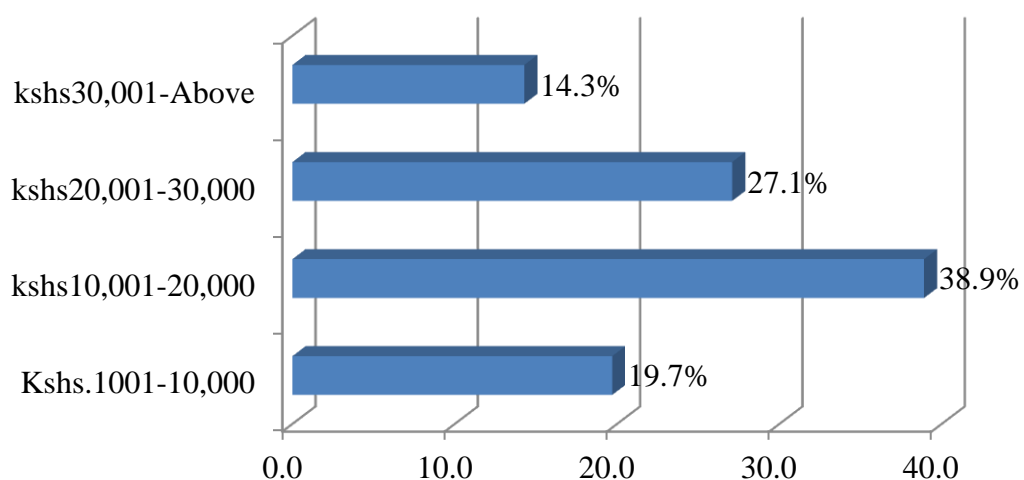


Figure 5. Water Connection Fee Charges

All the water projects charged connection fee to project members. Majority of the water project (38.9%) charged between Ksh10,001-20,000 as connection fee. This is above affordability to households which have low income hence hindering more water connection to households without tap water despite being project members. Based on the type of water management as indicated in Figure 4 the connection fee differed from one project to another. Water projects which charged connection fee below Ksh 10,000 were community water projects which drew water from Njoro River in which the water flows through gravity to a collection tank then distributed to members. The low connection fee is as a result of low technical requirement and low maintenance cost.

Church managed water projects also charged low connection fee of below Ksh 10,000 as it was a private- public partnership. Poku (2006) suggested three indicators which can be used to ascertain participation. These are beneficiary voice in choice of the water system, resource contribution and the level of women involvement in management committees. Reen (2005) specify beneficiary willingness to pay for connection fee and contribution in decision making as a basis for operationalizing participation. Saleth et al (2003) measured participation in terms of cash contribution, labor provision and beneficiaries taking responsibility in terms of operation and maintenance.

Some community managed water projects collaborated with the Ministry of Water and Irrigation (MWI) and CDF projects which had dug boreholes. This projects charged above Ksh10,000 as the cost of laying pipes, sinking of the borehole and metering the system which was met by the project members. Majority of the water projects in the study area had boreholes as the main source of water which utilized electricity as the source of power for pumping water which made the cost higher. This concurs with the study by Harvey and Reed (2007) who proposed that projects which use gravity force, solar energy and wind power charged less as connection fee as compared to projects that use electricity and diesel as the burden for project installation have to be shouldered by the beneficiaries for a project to be sustainable.

According to Kariuki (2013) water projects should be water demand responsive as the beneficiaries decide on the type and cost of connection for members to the water supply system. In the study area the cost charged was used to meet the cost of installation and to finance the cost of connecting water to members who had met the minimum requirement of

paying membership and connection fee. Some of the finances were utilized to meet operation cost for the life-cycle of the rural water supply system. According to Majory (2009) the cost of connection depends on several factors such as technical factors which include; technology selection, complexity of the technology, the technical capacity of the system to respond to the demand and provide the desired service level, the technical skills required to operate and maintain the system, the availability, accessibility and the cost of spare parts and the overall cost of operation and maintenance.

4.3.6 Household Water Consumption in Cubic Meters per Month

Table 9 indicate water consumption by respondents in cubic meters per month. The water consumption differed from one household to another.

Table 9

Household Water Consumption in Cubic Meters per Month

Water consumption	Frequency	Percent
0-3	2	1.0
4-6	30	14.8
7-9	87	42.9
10-12	84	41.4
Total	203	100.0

From the study results there were households that had higher water consumption per month while others had lower water consumption per month. Majority of the households had consumed about 7-9 cubic meters per month. This may be contributed by several factors such as household size, alternative water source, frequency of water supply, uses of the water and level of hygiene and sanitation. Households that consumed low cubic meters are household that had harvested water on their roofs or had small household size. According to Aluoka (2006) water consumption is influenced by several factors such as size of the households, size of livestock herds, alternative water source and level of hygiene. This affects demand and supply of water to the project members. According to Innstrand, Langballe, Falkum, and Aasland (2011) households that have a large family size, large livestock herds, level of household hygiene and sanitation as modern housing with flush toilets utilized more water per. A study by GWA (2006) indicate that water utilization differs between men and women as a result of their gender roles in the society.

Inadequate and unequal access of water can cause poverty, poor sanitation and hygiene which is termed as denial of human rights. UNDP (2006) indicated that access to adequate amounts of clean water is essential for maintaining good health, and access to water for agriculture is essential for food production. This concurs with the studies by Keen (2007) who stated that rural communities with access to sustainable safe water supplies have greater potential for engaging in economic activities to reduce poverty and improve their quality of life. Access and use of safe water supply in addition to good health it leads to time and energy saving from the drudgery of water fetching releasing women and children to participate in education and socio-cultural activities.

4.3.7 Monthly Water Tarrifs on Water Consumed

Table 10 indicate the study results on monthly water tarrifs which were varied a cross the water projects.

Table 10

Monthly Water Tarrifs

Monthly water tariffs	Frequency	Percent
Ksh 201-400	2	1.0
Ksh 401-600	37	18.2
Ksh 601-800	81	39.9
Ksh 801-1000	40	19.7
Above Ksh 1000	43	21.2
Total	203	100.0

In the study area water supply systems in the individual households were metered in order to determine the amount of water consumed per month. The meters were read by water kiosk attendants at the end of every month and members supplied with the monthly bills based on the amount of water consumed per cubic meter and standing charges. Majority of the project members paid between Ksh 601-800 as monthly charges for water consumption, while the least were charged between Ksh 201-400. Monthly water bills payments were done in a formal system of payment where the money was either deposited in bank accounts or using M-pesa either by business or till numbers and a receipt issued. This was done to avoid corruption and misappropriation of funds. Sometimes some water projects were charging some informal charges in a more informal approach such as users collecting money for a

repair in a more ad hoc fashion after a breakdown has already occurred on the water supply system. Results from the interview schedule with the divisional water officer project members indicated that members were willing to pay for services provided to them in order to ensure sustainability of the water project.

Kulkarni (2011) efforts should be made to involve all project members in determination of the water tariffs in order for them to pay for the service provided by the water project. According to Kariuki (2011) in order for the community water projects to meet the cost of maintenance, community members must be willing to pay for the services provided. However not every project member is willing to pay for the service provided or standing charges that are charged every month despite a member not consuming the water. According to the divisional water officer opinion the willingness to pay for the water service is influenced by several factors such as demand and the uses for the water. Water payment for service rendered is regarded as essential for the long term sustainability of the water project. Ong'or (2005) observed that payment of water bills is very important and should be done with great care when project members make a contribution for the purchase of spare parts or during maintenance of a water system which has broken down. According to GWA (2006) if water supply facilities are constructed based on supply and not on demand they usually fail as they cannot meet the running costs for operation.

4.3.8 Water Utilization by Project Members

Table 11 summarizes how water is utilized by project members in the study area. Water was utilized for three main activities namely domestic use, livestock use and other economic activities. Results from key informants indicate that women fetch water for production but their priority is domestic use of water while men give priority to productive uses of water. Traditionally men are responsible for productive uses of water, mainly the use of water for livestock and other economic activities.

Table 11

Water Uses by Project Members

Utilization	Freq	Percent
Domestic use	203	100
Livestock use	187	92.1
Other economic activities	25	12.3
Irrigation	0	0

All the water supply projects in the study area were developed with a dimension focused on domestic water supply and to provide water for livestock use only. All the water projects in the study area do not allow use of the water for irrigation purpose. Water supply in the study area was critical for hygiene, domestic use and for rearing livestock. Water provision also had other economic benefits to the households and played a significant role in improving hygiene and household income. This concurs with the study of Jenkins (2008) who noted that most of the water projects in Kenya are developed with a focus on domestic water supply or providing water for livestock use. Keen (2007) reported that water projects in Sub-Saharan Africa have not been properly designed to take into account the multiple uses of water. In the study area water was also utilized in small business such as poultry rearing, dairy farming under zero grazing, hotels and small bakeries which have promoted development of rural cottage industries hence creating employment in the rural areas.

Jenkins (2008) reported that lack of adequate water supply affects 6 hours of women's time daily in fetching water for domestic use. It is also estimated that about 70% of water borne related deaths especially in sub-Saharan Africa are caused by lack of safe and adequate water supply (Aluoka, 2006). The main objective of the community water projects in the study area was to supply water to households in order to reduce the burden of women and children who carry water for long distances so that they can save time for other activities. Lack of adequate water supply service is a major constrain to both personal and community development which affects mostly women and children.

As a result of gender difference in water utilization, policymakers have made attempted to incorporate gender issues in water development projects, including in the resolution declaring 2005-2015 the International Water for Life Decade (Shantz & Wright, 2011). However, these policies have not been adequately translated into practice, and attempts in some projects to involve women in water management initiatives have been meet with cultural prejudices that have hindered realization of gender integration in management of the water projects. Lyons (2004) observed that the trend of water management is changing, and water projects are becoming more multi-purpose, multi-use and multiuser. The involvement of both men and women, in the management of community water projects for various uses is essential to successful gender mainstreaming. Not addressing the multiple uses of water has been recognized as one of the causes of the lower participation of women in water user's association projects.

4.3.9 Frequency of Project Meetings

The study sought to find out the frequency of holding project meetings which is summarized in Figure 6.

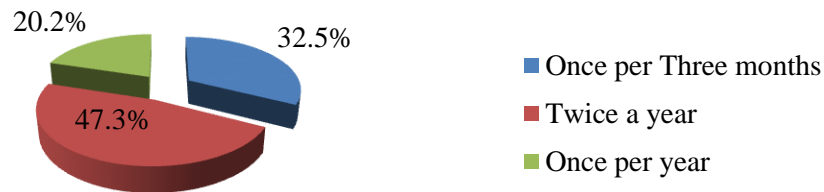


Figure 6. Frequency of project Meetings

Project meetings in the study area were held frequently in which project leaders engaged their members in an interaction to highlight the challenges of the water projects. High frequency of meetings gives the members an opportunity to raise their ideas and suggestions in order to be integrated in management of water project affairs. It also provides an interactive forum in which project members together with their representatives, brainstorm, share views on the best practices possible of managing the water users association projects. Project members who regularly attend meetings will most often report defects on water supply system whenever they occur (Roshini & Linda, 2009). They are also more likely to use meetings as a venue to voice their opinions and call for improvements. Most importantly they will also be more knowledgeable on how the management spends revenue collected from water sale and tariffs. The more beneficiaries take such action the more the project will become effective in term of technical performance and improved service delivery. Beneficiary satisfaction with the management committee is not only good for effectiveness in water service delivery but also aid in the establishment of sustainable community operated water schemes.

Project meetings help members to be social actors rather than passive subjects, manage their resources, make decisions and control the activities that affect their water project. Results from key informants indicate that there is a strong association between meeting attendance and members satisfaction with the management. Ravinder and Narayana (2007) indicated that project members who report having attended community water meetings tend to be more satisfied with the management than members who have never attended community water meetings.

4.3.10 Days of the Week in which Project Meetings are Held

From the study results the meetings in the study area were held during weekends and weekdays as indicated in Figure 7.

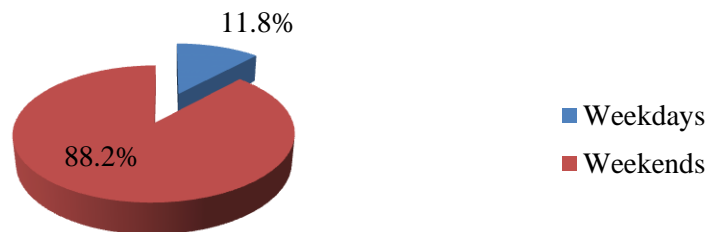


Figure 7. Days of the Week in which Meetings are Held

From the responses it can be deduced that majority of the water projects held their meetings on Saturdays when children are available at home. The reason is that children help their parents to carry out domestic chores on weekends so that their parents/guardians can have free time to attend project meetings. Also this allows households head who work far to return home over the weekends in order for them to attend meetings. Those projects which held their meetings over the weekdays are those whose members held church service on Saturdays and those that had an invited a guest in their annual general meetings. Men and women have different responsibilities and workloads. Women often have less time to devote to new activities.

Attending specific meetings may raise problems for women if meetings are set for the times of the day when they tend to be occupied with household responsibilities or childcare. (Damaske, 2011). As women have multiple roles in agricultural societies, they suffer from heavy workloads and have little time to participate in project meetings. According to Ross (2009) a functioning management team as a result of proper timing of project meetings can help water schemes avoid issues which may impede long term sustainability especially after the project's completion. These include issues such as technical hitches which lead to wastage or revenue loss. Development practitioners need to consider proper timing when planning for project meetings.

4.4 Two-thirds Gender Rule on Gender Participation in Management of Water Projects in Njoro Sub-county.

The first objective in this study sought to establish the influence of two-thirds gender rule on gender participation in management of water projects in Njoro sub-county. In meeting this objective a null hypothesis one (H_{01}) two-thirds gender rule has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county was formulated and analysed using ordered logit regression. In Njoro sub-county most of the water projects are public institution which are obliged to implement the constitutional requirement following the promulgation of the new constitution of Kenya in 2010, Article 81(b) states that; not more than two-thirds of either gender of the members of elective public bodies shall be of the same gender. Water projects in the study are working towards implementation of what is referred to as the two-thirds gender rule. The study sought to whether the water projects have achieved the constitution requirement in leadership positions which recognizes equality in gender participation.

4.4.1 Water Projects with Two-thirds Gender Rule

The respondents indicated that some water projects had two-thirds gender rule while others lacked the two-thirds gender rule in their project by-laws. The result shows that 56.7% of the respondents indicated that their projects had not entrenched two-thirds gender rule in their project by-laws, while 43.3 % of the respondents indicated that their projects by-laws had entrenched the two-thirds gender rule. From these findings we can deduce that the two-thirds gender rule in electing and appointing water management team was being followed though a good number of water projects had not followed. This clearly shows that projects were committed to the implementation of the two-thirds gender rule. The results of the study are summarized in Figure 8

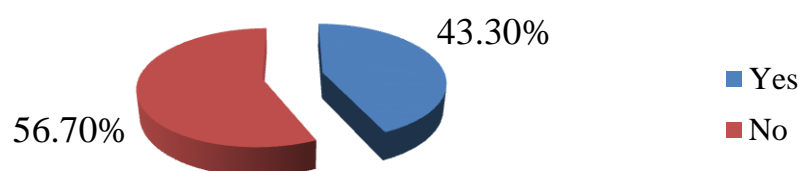


Figure 8. Water Projects with Two-thirds Gender Rule

Majority of the water project 56.7% in the study area lacked two-thirds gender rule. This have a direct impact on electing or appointing leaders in water management team and in division of labour during management activities. The aim of the policy is to ensure that fairness is exercised in decision making to avoid being biased, which when not taken care of will lead to gender inequality in management of water projects. According to Nyanjom (2011) a gender policy increase gender participation and also enhances project sustainability by enhancing water supply coverage. Gender policies have legitimacy to the extent that all stakeholders (including political leaders, government officials, donors, women and men in general public) collaborate in their development projects. This is seen as a valid expression of current government actions and future intentions to involve women in management of water projects (Muiru, 2012). Therefore, in order for gender policies to be effective in guiding changes they must be developed and formulation with the involvement and participation of all stakeholders (UN Women, 2011).

4.4.2 Preconditions for Leadership Positions in Management

Figure 9 represents the precondition for one to become a leader in the water project management team. From the response land ownership was the main precondition quoted by all the respondents (100%). This was followed by social status (78.2%) which is represented by the wealth of an individual and then followed by level of education (66.7%) as the main preconditions used by the project members either to elect or appoint a leader in management team.

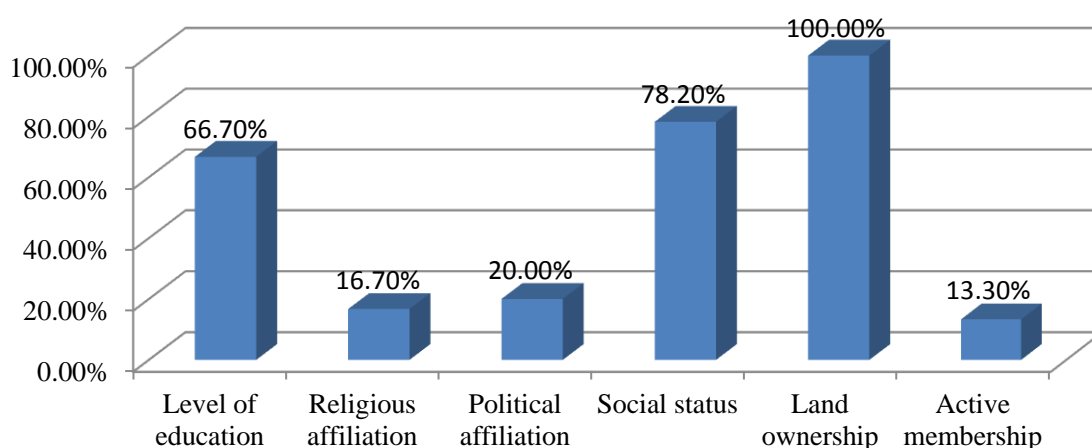


Figure 9. Preconditions for Leadership in Management Position

Land ownership influenced membership and pre-condition for leadership. This mostly affects women than men as land is patrilineally transferred to male headed households. Social status in terms of wealth of an individual increase the probability of an individual to be elected or appointed as a leader in the water project. Gender biases in education have led to low women participation in management as women have low literacy levels than men. Men also have more experience putting their arguments forward and feel more confident in public forums than women. Project members reported that for a leader to be appointed or elected to leadership position he/she must be an active project member who has the required time, heart for the project and moral standards to make the water project successful. Women and men make different calculations about the costs and benefits of their active participatory in project activities. Given the already high demands on most women's time, they often have little time to actively participate fully.

In church based water system the precondition is mainly religious affiliation where leaders are looked at in their the ability not to tolerate unethical behavior. In church managed water projects leaders served the interest of their church at the expense of the community interest in management of water. Siaroff (2011) reported that leaders who are elected or appointed should be actively participating in project meetings and committee deliberations and willingness to do the right thing, make the right decision even if it is difficult or unpopular.

A study carried out by Water and Sanitation Program - Africa (2007) observed that in irrigation projects leaders who were elected in some societies were those who can inspire, persuade, influence and motivate useful changes in the irrigation schemes. This concurs with this study, as project members had some precondition for leadership position. In studies carried out in India water projects leaders are individuals who command respect or influence by virtue of their professional status and training for example doctors, extension workers or teachers (Anonymous, 2012). In some study carried out by UN Women (2011) leaders are selected depending on affiliation with religious ideology or political party and command respect by virtue of their initiatives. Also leaders of various social organizations located in the villages command influence because of their involvement in development of people. According to Cha (2013) apparently the views of what constitutes effective leadership and the perceived characteristics of men and women as leaders are consistent across cultures, even the ones that are considered to promote gender egalitarianism.

4.4.3 Mode of Electing Leaders in the Water Projects

Figure 10 summarizes results of various modes of appointing or electing leaders in management team of the water projects.

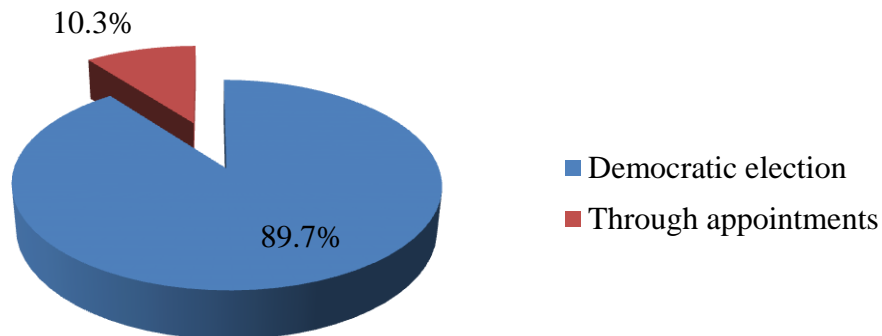


Figure 10. Mode of Election of Leaders in the Water Projects

From the study results there were two main methods of electing or appointing leaders in the management of the water project namely; democratic elections and appointments. In NARUWASCO managed water supply system, community members did not have direct participation in management and decision making but their interests were represented by the delegates whom they had elected. In CDF and church initiated water projects, election or appointing of leaders was influenced by politicians and church elders. The aim is to champion for the church and politicians interests over the interest of the beneficiaries of the water project. This led to underrepresentation of women in the management team since the two-thirds gender rule was never observed and the leaders appointed or elected are not necessarily accountable to the project members they are representing.

Democracy in election of leaders and precondition for leadership affects the implementation of two-thirds gender rule in electing or appointing leaders management team. All members had equal opportunity to be elected or appointed in the leadership position but this gives more advantage to males than females. Key informants acknowledged that despite equal opportunity between men and women in holding position in democratic elections men have an upper edge than women to hold leadership positions. This is a result of the ability of men to lobby and campaign from their fellow men making women to shy off from campaign as the men are the majority in the membership composition than women.

Sokile and Van Koppen (2004) observed that most water projects in sub-Saharan Africa use competitive electoral process in electing leaders and do not put into consideration gender issues since democracy involves free and fair electoral competition. According to Poku (2006) emphasis is put on voter's choice of leaders in the electoral process which indicates that other factors are never put into consideration during election of leaders in different positions. Nyanjom (2011) reported that even after implementation of the new constitution in the year (2010) men are still more considered for election or appointment in water management leadership position more than women. This implies that two-thirds gender rule is not yet operationalized in project by-laws in order for it to be followed during electing or appointment of leaders in management position. Muiru (2012) noted that women representation in the formal sector all over the world has been low due to either patriarchy or cultural factors which affect appointment and election of leaders.

Key informants reported that leaders who were elected in the water projects in the study area was through democratic process and held the positions through fair voting. During democratic elections project members lobbied and campaigned to be elected which was a major hindrance to women being voted in. The mode of electing and appointing the leaders in management team of water projects is critical in promoting gender equity and improving efficiency in delivery of water services. Studies by England (2010) the mode in which leaders are elected or appointed into leadership position is critical and can only be effective if women are empowered to shape and influence change.

According to Global Water Partnership (2010) leadership is not about appointing or electing women to give them positions as a token, but enabling them to influence decision making for the benefit of women as well as men in the management of the water projects. The overall purpose of leadership is to influence others, and to ensure that the allocation of water resource benefits people and advance development. In management of water resource, women often lack social and political power and are systematically excluded and marginalized from decision-making processes as a result of the mode of electing or appointing leaders in management team of the water projects.

4.4.4 Representation of Gender in Leadership Positions in the Water Projects

From the study results both genders held different positions in the management of the water projects as indicated in Table 12.

Table 12

Gender Representations in Leadership Positions

Position	Male		Female		
	Freq	Percent	Freq	Percent	Freq
Chairperson	12	92.3%	1	7.7%	13
Vice-chairperson	5	55.6%	4	44.4%	9
Treasurer	15	75.0%	5	25.0%	20
Organizing secretary	9	69.2%	4	30.8%	13
Vice-organizing secretary	2	50.0%	2	50.0%	4
General membership	117	81.3%	27	18.8%	144
	160	78.8%	43	21.2%	203

From the study results the number of women in key influential decision making positions is low as compared to that of men. Despite progressive policies of two-thirds gender rule, women are still concentrated in low influential management positions and in general membership positions. Most of the cultures in the rural communities have a very strong correlation between type of work and gender (Ravinder & Narayana, 2007). The division of roles between men and women are culturally determined by the society as a result of sexual orientation where men are expected to be aggressive and occupy leadership position and women to be submissive. Very few women have been allowed to go for skills training because of social resistance from men. Even though women perform the same tasks as the men and sometimes do so better than the men they do not always feel they are doing the right thing (Muiru, 2012). According to Ross (2009) women play very small roles in the implementation of the water projects as well as in the design implementation, training and maintenance of water resource projects.

4.4.5 Gender Dominating in Management Activities in the Water Projects

The study sought to find out which gender dominated on which management activity and the study results summarized in Table 13.

Table 13**Gender Participation in Management of Water Projects Activities**

Management activity	Male		Female		Both	
	F	%	F	%	F	%
Planning	164	80.8	0	0	39	19.2
Human resource	112	55.2	0	0	91	44.8
Control of daily operations	133	65.5	20	9.9	50	24.6
Revenue collection	131	64.5	72	35.5	0	0
Record keeping	108	53.2	93	45.8	2	1
Procurement	59	29.1	0	0	144	70.9
Plumbing	188	92.6	15	7.4	0	0
Kiosk attendant	55	27.1	130	64	18	8.9
Manager	11	100	0	0	0	0
Account	24	92.3	2	7.8	0	0

From the study results women contribution in senior management activities is minimum. The positions that were seen to be superior in management were dominated by males while those that were seen to be inferior were dominated by females. From example some of the activities which were dominated by males and were seen as senior in management include; planning, human resource management, plumbing and accounting. These activities are seen to require higher level of education and technical skills which women were seen not to have. Activities which were dominated by females and were seen not to require higher level of education and technical skills include; revenue collection, record keeping and kiosk attendants. This has led to gender stereotyping of some activities leading to gender disparity in management.

A gender perspective is needed to assure that the distinct needs, interests and priorities of men and women are taken into account for them to benefit equally from water projects (Hicks, 2012). Community Participatory approaches are criticized for failing to account for existing power relations or to transform prevailing social, political and economic power structures that prevent the inclusion of women (Harvey & Reed, 2007). Community participation spaces can be monopolized by local elites and serve to reproduce existing inequalities and social norms (Gunduz, 2011). Community participatory approaches can overlook the constraints that inhibit women ability to participate and the patterns of inequality that shape their behavior (Cleaver & Hamada, 2010).

In article 27(3), of the Kenyan Constitution states that men and women have the right to equal treatment including the right to equal opportunities in the economic, social, political and cultural spheres (Onyango, 2012). This is not the case in management of water projects in the study area as portrayed by gender representation in certain activities where males dominate in others and also females in others. According to studies by Muiru (2012) most women in Kenya are concentrated in low paying, low status occupations with low fringe benefits and carried out under poor working conditions and therefore hold very little prospect for poverty reduction and upward mobility. On the other hand, majority of women in the rural areas spend a great deal of time on low productive work which has created major income disparities between men and women (Anonymous, 2012). The reasons for gender disparities in employment opportunities include segregation in the labour market, social attitudes towards women, inadequate capacity on the part of women in terms of their knowledge and skills and lack of gender responsive policies and programmes (Gunduz, 2011).

4.4.6 Influence of Two-thirds Gender Rule on Gender Participation in Management of Water Projects

The study sought to test the hypotheses one (H_{01}) which stated that two-thirds gender rule has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county. Table 14 indicates ordered logistic regression analysis. The data was collected from 203 respondents. The outcome measured in this analysis was according to the levels of gender participation status (gender participation); low=0, medium=1 and high =3. The response variable, (gender participation), was treated as ordinal under the assumption that the levels of (gender participation) status have a natural ordering (low to high), but the distances between adjacent levels are unknown. Gender Policy (two-thirds gender rule) was measured as a continuous variable indicating the extent of non-deviation of two-thirds gender representation in the management positions. This variable was computed as a percentage.

The log likelihood for the fitted model of -194.80235 and the log likelihood chi-squared value of 31.56 indicate that the two parameters are jointly significant at 5%. The z test statistic for the prediction of gender policy was found to be ($p=0.041$) which is statistically significant at the 0.05 alpha. Pseudo R^2 of 0.312 implies that 31.2% of gender participation was contributed by two-thirds gender rule, confirming that gender inequality was well attributed to the existence (or absence) of two-thirds gender rule within the sampled water

projects. The log odds of gender policy enabled to compare water projects with gender policy to water projects without gender policy on expected gender participation levels given the other variables are held constant in the model. The ordered logit for water projects with gender policy indicate that their was a higher gender participation levels category of 0.48 than water projects without gender policy when the other variables in the model are held constant. Based on these results, the null hypothesis was rejected. Thus two-thirds gender rule has a statistical significant influence on gender participation in management of water projects in Njoro Sub-county.

Table 34

Ordered Log-odds (Logits) Results for Two-thirds Gender Rule on the Influence on Gender Participation

Iteration 0: log likelihood = -210.58254
 Iteration 1: log likelihood = -195.01878
 Iteration 2: log likelihood = -194.80294
 Iteration 3: log likelihood = -194.80235

Ordered logit estimates Number of obs = 203
LR chi2(1) = 31.56
Prob > chi2 = 0.00001
 Log likelihood = -194.80235 Pseudo R2 = 0.312

Gender participation	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Gender policy	.4823977	0.279694	1.72	0.041	1.030588	0.065792
_cut1	2.75468	0.869481	(Ancillary parameters)			
_cut1	5.10548	0.929539				

The Likelihood Ratio (LR) Chi-Square test whether atleast the predictors' regression coefficient is not equal to zero in the model. The number in the parenthesis indicates the degree of freedom of the Chi-Square distribution used to test the LR Chi-Square statistic and is defined by the number of predictors in the model. The LR Chi-Square statistic can be calculated by $-2*(L(\text{null model}) - L(\text{fitted model})) = -2*((-210.583) - (-194.802)) = 31.560$, where $L(\text{null model})$ is from the log likelihood with just the response variable in the model (Iteration 0) and $L(\text{fitted model})$ is the log likelihood from the final iteration (assuming the model converged) with all the parameters. Prob > chi2 indicate the probability of getting a

LR test statistic that is as extreme as, the observed under the null hypothesis where all of the regression coefficients in the model are equal to zero. The LR Chi-Square statistic for gender policy was found to be (31.56) when there was no effect of the predictor variables. The small p-value from the LR test, <0.00001 , leads to the conclusion that at least one of the regression coefficients in the model is not equal to zero. The parameter of the Chi-Square distribution used to test the null hypothesis is evaluated at one (1) degree of freedom.

Cut1 – This is the estimated cutpoint on the latent variable used to differentiate low gender participation from middle and high gender participation when values of the predictor variables are evaluated at zero. Subjects that had a value of 2.75 or less on the underlying latent variable that gave rise to gender participation variable would be classified as low gender participation given that the water projects lacked two-thirds gender policy.

Cut2 – This is the estimated cutpoint on the latent variable used to differentiate low and middle level gender participation from high gender participation when values of the predictor variables are evaluated at zero. Subjects that had a value of 5.11 or greater on the underlying latent variable that gave rise to gender participation variable were classified as high level of gender participations given that the water project had two-thirds gender policy. Subjects that had a value between 2.75 and 5.11 on the underlying latent variable would be classified as middle level gender participation.

Proportional odds ratios for the ordered logit model were obtained by exponentiating the ordered logit coefficients, e^{coef} , or by specifying the ‘or’ option (see Appendix B for the odd ratio tables). The odds ratio for the influence of gender policy on water projects with or without gender policy indicate that, the odds logs of high gender participation versus the combined middle and low gender participation for water projects with gender policy are 0.6173 times lower than for water projects without gender policy, given the other variables are held constant. Likewise, the odds logs of the combined categories of high and middle gender participation level versus low gender participation level is 0.6173 times lower for water projects with gender policy compared to water projects without gender policy, given the other variables are held constant in the model.

The findings from this study indicated a statistically significant relationship between two-third gender policy and gender participation. Firstly, gender participation was found to be higher in projects which followed two-thirds gender policy in electing or appointing leaders

in leadership positions. However, most projects were found to be lax in applying gender rules in the elections of leaders. Secondly, gender participation was found to be higher when women volunteered their candidature to be elected in leadership directly by other project members instead of being appointed to the set aside positions as representatives for affirmative action. The study results imply that the existence of two-thirds gender rule among the water projects reduces gender inequalities. The results of interview schedule from the key informants indicate that two-thirds gender rule influenced women to vie for leadership positions in the election of management team. It was also established that the commitment of the government of Kenya in promotion of power-sharing and decision-making was good. In addition, two thirds gender rule empowered women to vie for political positions in order to increase sustainable management of the water projects.

Failure to operationalize the two-thirds gender rule in project by-laws in appointing or electing leaders in management team have prevented women from advancing to senior management positions in water projects. Several factors have been identified to hinder realization of two-thirds gender rule in management which include; lack of land ownership as membership criteria, levels of education, social-economic status which affects social status of individuals in the society. This influence the probability of one to be elected or appointed in leadership position.

According to studies by Hicks (2012) low representation and participation of women in water resource management is as a result of socio-cultural beliefs which act as the major barriers in this regard. These beliefs emphasize the superiority of men and the inferiority of women. They form an integral part of the socialization process and the gender education and training most men and women are exposed to from childhood (Damaske, 2011). Based on the concept of role expectancy, an individual develops through the years his or her own set of internalized values, beliefs, attitudes, ideals and aspirations. Another barrier is the institutional framework guiding the gender division of labour, recruitment and upward mobility. According to studies by Kabane (2010) men dominate public decision-making bodies, leading to male values being reflected in decision-making meetings and boards.

In Kenya women's participation in key decision-making positions is still minimal. Women's participation in decision-making and political leadership is an obligation mandated by the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), to

which Kenya is a signatory (UN Women, 2011). Additionally, the Constitution of Kenya 2010 in Article 27 (1) enshrines the equality of all persons: “Every person is equal before the law and has the right to equal protection and equal benefit of the law”. The Constitution further provides for affirmative action to ensure the realization of equality, specifically Article 27 (8): in addition to the measures contemplated in clause (6), the State shall take legislative and other measures to implement the principle that not more than two-thirds of the members of elective or appointive bodies shall be of the same gender (Onyango, 2012). Thus the Constitution prescribes at least one way in which the government can ensure greater representation of women.

4.4.7 Hindrances in Implementation of Two-thirds Gender Rule in Water Projects

In determining the perception of the respondents on certain factors hindering the implementation of two-thirds gender rule in management of water projects. Items were constructed to measure perception on a scale of 1 to 5 point in likert-type survey instrument. That is: Very low=1 Low=2, Neutral =3, High=4 and Very high=5. The scale was compressed into two main categories low (comprising of very low, low and neutral) and high (comprising of high and very high). The results were summarized in Table 15.

Table 15

Hindrances in Implementation of Two-thirds Gender Rule in the Management of Water Projects

Statement	Low	High	Total	Mean	Std. Dev.
Level of education	37 (18.2%)	166 (81.8%)	203 (100.0%)	4.26	0.82
Cultural believes	48 (23.7%)	155 (76.3%)	203 (100.0%)	4.08	0.89
Lack of land rights	42 (20.6%)	161 (79.3%)	203 (100.0%)	4.04	1.06
Project by laws	79 (38.9%)	124 (61.1%)	203 (100.0%)	3.33	1.34
Unwillingness to take positions	94 (46.2%)	109 (53.7%)	203 (100.0%)	3.32	1.49
Political interference	148 (72.9%)	55 (27.1%)	203 (100.0%)	2.62	1.32
Lack of information	140 (68.9%)	63 (31.1%)	203 (100.0%)	2.6	1.36
Triple gender roles	194 (95.6%)	9 (4.5%)	203 (100.0%)	1.99	0.91
Religious affiliation interference	192 (94.5%)	11 (5.4%)	203 (100.0%)	1.88	1.00
Financial resource	203 (100.0%)	0 (0.0%)	203 (100.0%)	1.53	0.81

Despite the progress in the implementation of two-thirds gender rule several perceptions were highlighted as drawbacks to realization of this policy. From the study results the hindrances were ranked from the highest mean to the lowest means. Level of education was ranked the highest while financial resources was ranked the least hindrance towards realization of one third gender policy. However, the dynamics of power relations between women and men committee members, women's involvement in real decision making and the structural factors that perpetuate the subordinate position of women in community affairs are given little attention. In addition, the participation and involvement of women and men in most community water management committees is not based on equality.

The formal inclusion of women in participatory projects doesn't take into account gender roles and structured gendered hierarchies that can reinforce or exacerbate existing gender inequalities (Hulsebosch, 2003). The technocratic approach to women's participation presents an oversimplified view that links their participation with improvements in efficiency and empowerment while neglecting the social complexity and diversity of their livelihoods concerns, or their situations, motivations, and strategies" (GWA, 2006).

Individual abilities to participate in public spheres are often tied to power in the household and can depend on household bargaining power, division of labor and control of assets (Hartmann, 2010). In Africa, women often face high opportunity costs to participate due to their domestic responsibilities and mobility restrictions. This can be compounded with high societal costs of having to challenge social norms to participate (Zwarteveen, 2008). As such, women often state that they do not see the need to participate formally and can benefit through representation by male neighbours or relatives (Hulsebosch, 2003). Yet formal participation in institutions is more secure from elite capture and give women more bargaining power (Hicks, 2012). The larger the degree of gender inequality, the higher the transaction costs will be to overcome gender barriers to establish mixed gender participatory spaces and will require building women's capacity in all women groups as a first step (Sokile & Van Koppen, 2004).

4.5 Land Tenure and Gender Participation in Management of Water Projects

The second objective in this study sought was to establish the influence of land tenure on gender participation in management of water projects in Njoro sub-county. In meeting this objective a null hypothesis two (H_{02}) land tenure has no statistical significant influence on

gender participation in management of water projects in Njoro Sub-county was formulated and analysed using ordered logit regression. Land and water rights are always taken into account and addressed simultaneously; including gender issues in order to avoid poor management of water resource projects. Land tenure plays a significant role in attainment of equity and equality in management of water resource projects. Land rights are transferred from one generation to another in different ways and this study seeks to establish the relationship between land tenure, gender and management.

4.5.1 Type of Land Ownership among Project Members

The study sought to examine the type of land ownership in the study area where the results were summarized in Figure 11.

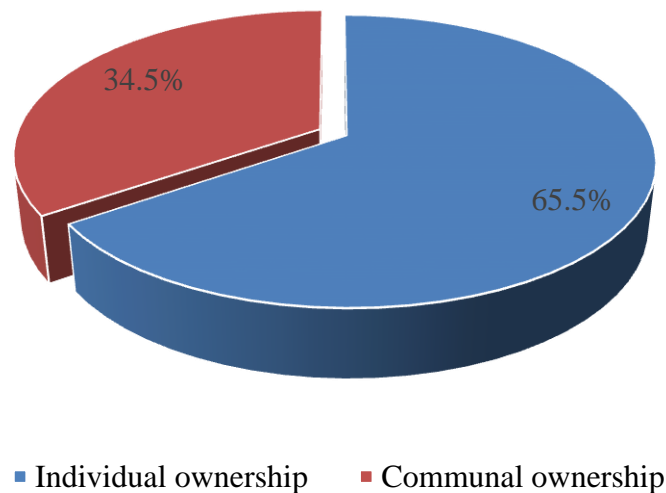


Figure 11. Type of Land Ownership among Project Members

Land ownership was identified as the main precondition for membership in water projects as indicated by Table 7. Land is also commonly held by household-heads who are predominantly males in most societies in the study area. Study results revealed that the predominant form of land ownership in Njoro sub-county is through legal rights and inheritance through customary tenure system, where culture dictates that only sons and not daughters inherit from their parents. The study area is inhabited by several ethnic groups who have different cultural customs that dictate how land is owned by men and women. Most of the upper parts of the study area are kikuyu's, Ongiek and Kalenjins native reserve lands where people are more tightly connected by customary norms and laws and land is owned communally. On the lower part of the study area where land buying companies have divided

land into smaller plots which are individually owned by different ethnic groups (Jenkins, 2008). In the study area, land adjudication is carried out along ethnic line in the upper region hence homogenous ethnicity and in the lower regions the land is bought by land buying companies and subdivided into small portions and bought by different ethnic communities' hence heterogeneous ethnicity. According to FAO (2010) land tenure plays one of the vital roles in shaping water project members position in decisions making, membership in the water project and utilization of water. In Kenya's historical processes of settlement and land tenure differentiation have created a plurality of land and water property rights (Nyanjom, 2011).

According to World Bank (2010) there are seven ways in which land is currently held by the citizens in the country; trust lands which have no title deed, government land with no title deed. There is also adjudicated land with freehold title deed on completion of adjudication, settlement schemes with freehold title on discharge from the Settlement Fund Trustee (SFT) and large scale farms with leasehold titles. Land buying companies with freehold title on subdivision into small units and forest land reserved on gazettement. According to Kariuki (2013) riparian reserves are under state authority and lack of effective enforcement means that the open access do not lead to better service. Riparian reserves often leads face degradation of the water sources through pollution or depletion because no one takes responsibility to protect the water source.

4.5.2 Ways of Transferring Land Rights to Project Members

From the study results land rights are transferred to the members of the society in Njoro sub-county in two major ways; customary and legal procedures and the results summarized in Figure 12.

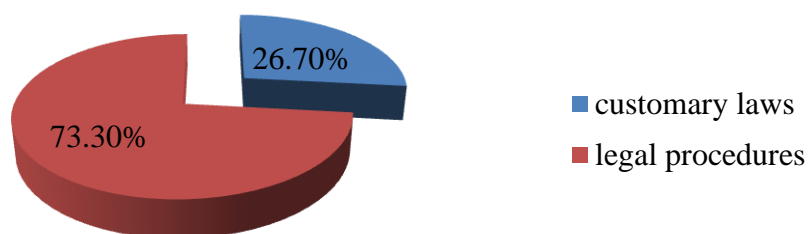


Figure 12. Transfer of Land Rights to Project Members

Study results revealed that the predominant form of transfer of land tenure in Njoro sub-county was through legal rights and through customary laws. Most women do not own land due to underlying strategic constraints caused by culture: where women have no equitable division in autonomy over access to and control over land resources which in turn affects independence in participation in project activities and decision making by women in public domains. This may prevent women and young men who do not own land from participating in project planning, operation and maintenance.

According to FAO (2011) the exclusion of women and young men who do not own land in decision making not only delays delivery of benefits but also affects equity and institutional efficiency. While women can legally inherit land under the 2010 constitution, in practice it is rare. There are large variations in local support for women inheriting land, only a handful of Kenyan's who view women inheriting property as socially acceptable. The general argument against women inheriting land is that a woman will have access to land in her place of marriage and that of her parents which means she has access to a double portion which would be unfair to her male siblings (FAO, 2012).

In customary laws culture dictates that only sons and not daughters should inherit from their parents. This study results are in line with what Daley (2011) noted that legal procedures and customary are the most common tenure system in Kenya, whereby, access to land is governed by the customs, rules, and regulations of the community. Patriarchal relations also express themselves in control over land rights in the study area. Water rights are often closely tied to land tenure arrangements and are often transferred with land. In many African communities land rights are usually passed from father to son (IFAD, 2014). Thus, though women may be working on the land, they often have no right to participate in organizations that take decisions regarding its use. Moreover, both in Latin America and Asia, they are culturally excluded from irrigation and hence from decisions and activities involved in water provision (IFAD, 2014).

4.5.3 Perception of Project Members on the Influence of Land Tenure on Gender

Participation

In determining the perception of project members on influence of land tenure on management, items were constructed to measure perception on a scale of 1 to 5 point likert-type survey instrument. That is: strongly disagree=1 Disagree=2, Undecided=3, Agree=4 and Strongly agree=5. The perception of respondents on land in management was condensed into

two groups continuum of either Disagree (comprising of strongly disagree, Disagree and Undecided) or Agree (comprising of Agree and Strongly agree) and the results summarized in Table 16.

Table 16

Perception of Land in Management of Water Projects

Statements	Disagree	Agree	Mean	Std. Dev.
Land tenure affect the likelihood of membership	4(2.0%)	199(98.1%)	4.47	0.53
Land tenure affect likelihood to hold leadership position	25(12.3%)	178(87.7%)	4.36	0.69
Land tenure affect water connections in the household/plot	19(9.4%)	184(90.6%)	4.3	0.63
Land tenure affect gender participation in operation and management	37(18.2%)	166(81.7%)	4.25	0.74
Land tenure affect gender contribution in planning and design of the project	162(79.7%)	41(20.2%)	2.52	1.03
Land tenure affect the amount of water supplied	198(97.5%)	5(2.5%)	2.04	0.79
Land tenure affect duration membership	203(100.0%)	0(0.0%)	1.82	0.75
Land tenure affect how water is utilised	201(99.1%)	2(1.0%)	1.57	0.69

This is an indication that land tenure has a direct impact on project management as most respondents were in agreement that land tenure had either a higher or a lower impact on management. From the study results, land was a major asset in water resource management as it dictated participation of members in most of the activities in management such as membership, water connection and participation in operation and maintenance. The study results further indicated that land tenure influenced water connection, labour division, election of members, water utilization, control and operation of water system and the likelihood of one becoming a member in the water projects in varied extents.

In most of the ethnic groups in the study area, men held the land rights as a result of patriarchal culture in which men own formally or informally the key productive assets. This is an indication that land has a greater influence on gender participation and other water management activities. Water is a vital element to the productive capacity of land (FAO,

2012). The participation of gender in management position is influenced by land tenure. Land resource defines social status and power in the management of water resource. According to International Land Coalition (2011) land influences the power structures relationship both within and outside the household.

In most communities, gender disparities with regards to land are linked to traditional and customary rules that enforce assumptions that men, as heads of households, have to control and manage land. This reflects the idea that women are incapable of managing land effectively. There is a notion that land given to women is lost to another family in the event of marriage, divorce or (male) death, and that men will provide for women's financial security (FAO, 2012). The assumption that the head of the family is the year-round provider of food for the entire family does not reflect reality, as mostly men migrate and leave women to manage the family (Lachapelle, 2008).

Women's rights to land depend on their kinship and/or relationships as wives and mothers. Similarly, there are a few societies where rights to land stems from the female line, and in this case male partners and children may be disadvantaged (FAO, 2010). Barriers to women's rights to land often include inadequate legal standards and ineffective implementation of this legal rights at national and local level. This is also as a result of weak institutions, customary laws, religious laws, discriminatory cultural attitudes and practices. Addressing issues of inequality in land rights is therefore a critical condition for a sustainable management of water projects. Gender considerations in relation to water need to be framed within the context of the burdens faced by women.

4.5.4 Gender Most Affected by Land Tenure in Participating in Project Activities

The respondents reported that the most affected gender by land tenure in participating in management of water projects and the results summarized in Figure 13.

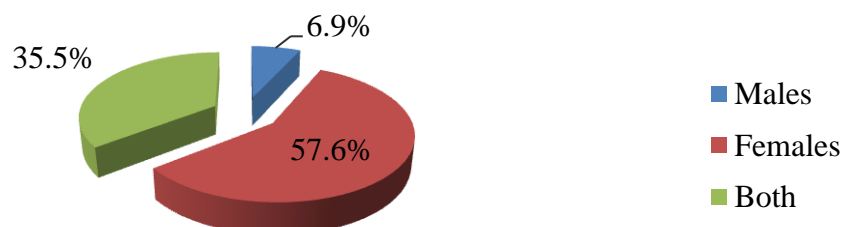


Figure 13. Gender Most Affected by Land Tenure

From the study results the question of water management is closely intertwined with land rights and it is obtained through land ownership. All genders were affected by land tenure in management of water projects but the most affected gender was females. One of the greatest factors working against women in participating in water management is land tenure system. In African cultures, land is passed on to men and not women. In most rural areas of Njoro sub-county land is mostly registered under men than women. Even though women are the ones who deal with utilization of water and provision of labour in the farms, the fate of land and water entirely is dominated by males. Women are involved mostly in provision of water in most households and farms and they have little influence on land rights. Land tenure systems and legal structures actually marginalize women, when in-fact, they are the most affected and real invisible land managers in Kenya.

The low status of women as compared to men in management of water projects was primarily reflected in their lack of rights and ownership of land. Although the participation of women in management of water users association projects have increased, two-thirds gender rule can only be attained when restriction to land ownership is removed, as in most of the ethnic communities in the study area land rights were dominated by men and is the major criterion for membership in the water projects. In legal terms women have struggled to win fairly extensive rights to inherit and control land (International Land Coalition, 2011). Few women own land and exercise effective control over it. According to FAO (2010) bureaucracy on land adjudication and distribution plays a significant role in rural land administration, with traditional leaders being provided with limited responsibilities over land management and people in areas where usufruct rights to the land are still practiced. The household which had individual land ownership had more rights in decision making positions than households that owned land communally. Nonetheless, the implementation of market liberalization and democratization policies has had an indirect if not direct impact on customary management of land tenure (FAO, 2012).

4.5.5 Influence of Land Tenure on Gender Participation in Management of Water Projects

To test the hypothesis two (H_{02}) which states that land tenure has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county, ordered logistic regression was used. Table 17 indicates an output of ordered logistic regression analysis. The data was collected from 203 respondents. The outcome measure in

this analysis was the level of gender participation status (gender participation); low, medium and high. Variable, (gender participation), is treated as ordinal under the assumption that the levels of gender participation status have a natural ordering (low to high), but the distances between adjacent levels are unknown. Landrights (Land tenure) measured as a categorical variable (with two possible outcomes) 1= individual land tenure and 2=communal land tenure. The log likelihood for the fitted model of -180.18 and the log likelihood chi-squared value of 80.34 indicate that the two parameters are jointly significant at 5%. The z test statistic for the prediction of land rights was found to be positive (p=0.036) and statistically significant at the 0.05 alpha. Pseudo R² of 0.253 implies that 25.3% of gender participation is contributed by land tenure confirming that the gender participation in management of water projects was well attributed to the type of land tenure among the sampled projects.

The observed results indicate that one unit increase in land rights test scores result in 0.30 unit increase in the ordered log-odds of being in a higher gender participation category while all the other variables in the model are held constant. This implies that Project members with individual land tenure had more rights to participate in management than those who had communal land rights. Based on these results, the null hypothesis was rejected. Thus land tenure has a statistical significant influence on gender participation in management of water projects in Njoro Sub-county.

Table 17

Ordered Logistic Regression for the Influence of Land Tenure on Gender Participation in Management of Water Projects

Iteration 0: log likelihood = -220.34626
 Iteration 1: log likelihood = -180.17816
 Iteration 2: log likelihood = -180.17568
 Iteration 3: log likelihood = -180.17567

Ordered logit estimates

Number of obs = 203
 LR chi2(1) = 80.34
 Prob > chi2 = 0.0030
 Pseudo R2 = 0.253

Log likelihood = -180.17567

Gender participation	Coef.	Std. Err.	Z	P> z	[95% Conf. Interval]	
Land rights	.300201	0.016586	1.81	0.036	-0.00249	0.062528
_cut1	2.75468	0.869481	(Ancillary parameters)			
_cut1	2.75468	0.869481				

The Likelihood Ratio (LR) Chi-Square, test whether atleast the predictors' regression coefficient is not equal to zero in the model. The number in the parenthesis indicates the degree of freedom of the Chi-Square distribution used to test the LR Chi-Square statistic and is defined by the number of predictors in the model. The LR Chi-Square statistic can be calculated by $-2*(L(\text{null model}) - L(\text{fitted model})) = -2*((-220.35) - (-180.18)) = 80.34$, where $L(\text{null model})$ is from the log likelihood with just the response variable in the model (Iteration 0) and $L(\text{fitted model})$ is the log likelihood from the final iteration (assuming the model converged) with all the parameters. Prob > chi2 indicate the probability of getting a LR test statistic as extreme as the one observed under the null hypothesis where all of the regression coefficients in the model are equal to zero. The LR Chi-Square statistic was found to be (80.34) if there is no effect of the predictor variables. The small p-value from the LR test, <0.00001, leads to the conclusion that at least one of the regression coefficients in the model is not equal to zero. This p-value is compared to 5% alpha level, in order to accept a type I error. The parameter of the Chi-Square distribution used to test the null hypothesis is evaluated at one (1) degree of freedom.

cut1 – This is the estimated cutpoint on the latent variable used to differentiate low gender participation from middle and high gender participation when values of the predictor variables are evaluated at zero. Subjects that had a value of 2.53 or less on the underlying latent variable that gave rise to gender participation variable would be classified as low gender participation given that the subjects had communal land rights.

Cut2 – This is the estimated cutpoint on the latent variable used to differentiate low and middle level gender participation from high gender participation when values of the predictor variables are evaluated at zero. Subjects that had a value of 4.17 or greater on the underlying latent variable that gave rise to gender participation variable were classified as high level of gender participation given that the subjects had individual land tenure. Subjects that had a value between 2.53 and 4.17 on the underlying latent variable would be classified as middle level gender participation.

Proportional odds ratios for the ordered logit model are obtained by exponentiating the ordered logit coefficients, $e^{\text{coef.}}$, or by specifying the 'or' option (see Appendix C for the odd ratio tables). The odds ratio of land tenure indicates that for a one unit increase in land rights leads to proportional odds ratio of comparing individual land rights to communal land rights on gender participation given the other variables in the model are held constant. For

individual land rights, the odds ratio of high gender participation versus the combined middle and low gender participation are 0.760 times lower than for communal land rights, given the other variables are held constant. Likewise, the odds ratio of the combined categories of high and middle gender participation level versus low gender participation level is 0.760 times lower for individual land rights compared to communal land rights, given the other variables are held constant in the model.

Insecurity of women's land tenure is one of the most serious obstacles to increase women participation in water resource management. Security of land tenure is not limited to individual ownership, but can exist in a variety of forms such as user's rights to communal property. Land tenure enables the holder to make management decisions on how land-based resources will be used for immediate needs and long-term sustainable investment in water projects (FAO, 2012). The study results indicate that the lower the rights to own land among the water projects members, the greater the gender inequalities in participating in management of the water projects.

According to FAO (2012) women's control over natural resources is limited because of societal values and practices determining men as the 'guardians' of property, the 'heads of the household' and the decision makers in the public sphere. The patrilineal inheritance traditions mean that men own the larger portion of land a small portion of the land is owned by women. In 2010, it became legal for women to have their name on a land deed, but women's access to land is controlled by men (Onyango, 2012). Control over resources further depends on factors such as ethnicity and socio-economic class despite their being laws and regulations stipulating land ownership and inheritance, women worldwide have a limited control over natural resources especially land.

FAO (2012) observed that globally, women own less than 20% of agricultural land. IFAD (2011) study observed that in most of the developing countries, a woman's use of land is restricted to temporary cultivation rights, allocated to her by her husband, and in exchange, she provides food and other goods for the household. Onyango (2012) observed that women are not able to pass the land on to her heirs nor she will be entrusted with the land if her husband dies; the land is automatically granted to her husband's family or any male children the couple may have produced. The single most important factor affecting women's situation is the gender gap in command over property. A study by FAO (2010) observed that as land

privatization is increasing among the Kenyans leading to the end of communal lands, women find themselves unable to use any land not bestowed upon them by their families, rendering unmarried women and widows vulnerable. Many women still face legal hurdles when attempting to acquire land through inheritance or the marketplace.

4.6 Influence of Gender Roles on Gender Participation in Management of Water Projects

The third objective in this study was sought to assess the influence of gender roles on gender participation in management of water projects in Njoro sub-county. In meeting this objective a null hypothesis (H_{03}) gender roles has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county was formulated and analysed using ordered logit regression. Gender roles and sex stereotypes and social prejudices may hinder gender participation in water resource management. The traditional female roles and male roles are deeply ingrained and glorified in all Kenyan communities. According to the United Nations (2011) sex stereotypes are among the most firmly entrenched obstacles to the elimination of discrimination against women, and are largely responsible for the denigration of the role and potential of women in society.

4.6.1 Gender Distribution of Roles among the Respondents

From the study results males and females performed different roles in the study area and the results summarized in Table 18.

Table 18

Gender Distribution of Roles among the Respondents

Gender roles	Males		Females		Both	
	Freq	%	Freq	%	Freq	%
Children rearing	11	5.4	35	17.2	157	77.3
Reproduction tasks (household chores, cooking, washing and cleaning)	8	8.9	185	91.1	0	0
Income generating activities	144	70.9	10	4.9	49	24.1
Provision of paid labour	91	44.8	87	42.9	25	12.3
Provision of unpaid labour	30	14.8	113	55.7	60	29.6
Community work (collective organization of social events such as ceremonies and celebrations)	7	3.4	96	47.3	100	49.3

From the study results most of the gender roles were performed by females than males. Gender division of labour and participation in decision making processes are influenced by culture and traditions that determine roles and contributions in water management. Women have traditionally borne the bulk of the responsibilities for the family which include; child bearing, rearing, taking care of the nuclear family, to taking caring for the elderly and ailing parents or extended family members. This unequal domestic burden means that women may have difficulty in juggling between the demands of domestic roles, and may be reluctant to take responsibilities that demand long hours in public forums such as water management.

In most African society, gender roles and stereotypes determine how males and females should think, speak and interact and what work is assigned to them; they often limit the opportunities and chances both women and men have in their lives. These gender roles and the status attached to women and men vary widely by region, age, ethnicity and social class and they change over time (Saleth et al. 2003). In most traditional, rural contexts, men are the head of the household; they represent the household towards the outside, make the important decisions and often work outside the home. Women are mostly responsible for food preparation, food production, water collection and for the general wellbeing of the family (Reena, 2005). In some cultural contexts, restricted roles for women also limit their mobility, discouraging autonomous decision-making and responsibilities in public spaces.

According to Baker and Raney (2007) report that reproductive roles of women limit their participation in development programs. Respondents in this study revealed that roles are distributed according to biological differences and traditional stereotyping. The respondents also indicated that the gender distribution of roles over burden women derailing their participation in community water management projects. It should be appreciated that women's reproductive role draws them closer to the environment in their effort to provide food and water to the family. This has been possible because most women were members of women groups and collectively work together to improve the water supply in the household (Chan & Ng, 2013).

Women persistently face more household demands and family responsibility even when working outside the home because women are still expected to be the primary caregivers (Baker & Raney, 2007). This reduces time available for work and increases stress, leading to more work, family conflict and attitudes and behaviors that interfere with women leadership.

Men on the other hand are expected to be good economic providers for their families and devote time to economic activities. Therefore, as “breadwinners” men are better able to maintain their family and work demands at the same time than women (Anderson & Hamilton, 2005). Men tend to make greater sacrifices at home in order to maintain their work responsibilities, whereas women do the opposite (Baker & Raney, 2007).

Aikman and Unterhalter (2013) observed that family-work constraints can lead women to pull double duty with home and work responsibilities, and in turn restrict participation in water projects rather than encourage it. The division of labour and responsibilities (who does what work), social attitudes, and unequal access to resources all contribute to a situation where policies and programmes have a different impact on women and men, (for example, project initiatives and poverty reduction strategies). Furthermore, these differences and inequalities influence how women and men participate in and respond to new initiatives (FAO, 2010). In most African societies men’s and women’s situations, interests, and priorities are different not because of biological differences, but because society’s conception of male and female roles and qualities positions of the two groups in a specific relationship to one another. Another underlying root cause of different priorities of men and women in relation to water and sanitation project management is the low value which is placed on women’s time (IFAD, 2011). Women have traditionally been assigned most of the domestic roles, such as cooking, disposing human waste and drawing water to the point that their public life is severely limited (Baker & Raney, 2007). Their narrowed public life is further restricted since men hold positions of authority.

4.6.2 Perception on Gender Roles Affecting Management of Water Projects

In determining the perception of project members on influence of gender roles on management items were constructed to measure perception on a scale of 1 to 5 point likert-type survey instrument. That is: strongly disagree=1 Disagree=2, Undecided=3, Agree=4 and Strongly agree=5. From the respondents’ perception on how gender roles influence gender participation in management were condensed into two groups in a continuum of either Disagree (which comprises of strongly disagree, Disagree and Undecided) or Agree (which comprise of Agree and Strongly agree) and the results summarized in Table 19.

Table 19

Perception on Gender Roles Influencing Management

Statements	Disagree	Agree	Mean	Std. Dev.
Gender roles influence participation in operation and management	53(26.1%)	150(73.9%)	2.990	0.771
Gender roles influence official's ability to perform management tasks.	148(72.9%)	55(27.1%)	2.458	0.565
Gender roles influence attendance of management meetings	184(90.6%)	19(9.4%)	2.148	0.651
Gender roles influence division of labour	198(97.5%)	5(2.5%)	1.911	0.285
Gender roles influence utilization of water	190(93.6%)	13(6.4%)	1.675	0.684
Gender roles influence election of members on leadership posts	181(89.2%)	22(10.8%)	1.532	0.858

From the study results gender roles causes either a high or low impact in gender participation in management of water resource. In most families, women are still responsible for the majority of child-care and homemaking. Women's responsibilities for family life whether current or anticipated slow women's progress because of both external and internal expectations. Although there is no documentation that being a parent diminishes managerial ability, there are still many who believe that such responsibilities inhibit the ability of women to perform their jobs as school managers, and, therefore, that such responsibilities make women undesirable candidates for administrative positions. At the same time, women sometimes say that family responsibilities keep them from applying for and assuming administrative positions, not because these women do not think they could do everything, but because they believe the burden would be too high for their families and themselves.

Inequalities do arise from the process of assigning to men and women, boys and girls, specific social roles, privileges, rights, responsibilities and duties on the basis of the sexes of the persons concerned. According to Baker and Raney (2007) in most societies, women have primary responsibility for management of household water supply, sanitation and health. In this process, many African societies do manifest cultural diversity as exemplified in complex gender driven power relationships that disadvantage women and girl-children in accessing

and benefiting from management of water resources and services delivery. Socio-cultural orientations in different societies inculcate gender differences in performance and distribution of gender roles.

Boys and girls undergo different cultural orientations regarding birth ceremonies and later on division of labor in productive and domestic chores, based on gender stereotyped artifacts such as clothes and toys, games and play within the context of the overall preparation and skills training for adult roles. As a result of women dependence on water resources, they have accumulated considerable knowledge about water resources, including location, quality and storage methods. However, efforts geared towards improving the management of the world's finite water resources and extending access to safe drinking water and adequate sanitation, often overlook the central role of women in water management (Anderson & Hamilton, 2005).

Gender aspects tend to provide different domestic responsibilities to women more than men in most households (e.g. food preparation, child care, and cleaning). These responsibilities may limit the time women have available to pursue opportunities as well as limit their mobility. Baker and Raney (2007) argues that it is important to work with women in all water development projects, recognizing their multiple roles as domestic and productive water users, and this should not be overlooked by planners and policy makers. Water has never been a 'free good' for the poor, particularly women, who bear a disproportionate burden with respect to their access to and 'control' over water resources (GWA, 2006). Over the past decades, planners assumed that women are the only ones who are concerned with domestic water and men for productive water use (FAO, 2014). Water resources management should be based on a participatory approach as both men and women should have equal voice and involvement in the management and sustainable use of water resources (IFAD, 2010).

4.6.3 Influence of Gender Roles on Gender Participation in Management of Water Projects

To test the hypothesis three (Ho₃) which states that gender roles has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county, ordered logistic regression was used. Table 20 indicates an output of ordered logistic regression analysis. The data was collected from 203 respondents. The outcome measure in this analysis was the level of gender participation (gender participation); low, medium and

high. Variable, gender participation, is treated as ordinal under the assumption that the levels of gender participation status have a natural ordering (low to high), but the distances between adjacent levels are unknown. Gender roles (load in gender roles) measured as a continuous variable indicating respondents load in gender roles. This was measured through involvement of both men and women in gender related tasks which include (Children rearing), reproduction tasks (household chores, cooking, washing and cleaning), income generating activities, provision of paid labour, provision of unpaid labour and community work (collective organization of social events such as ceremonies and celebrations). This generated a scale variable where zero (0) indicate the lowest load and six (6) indicating the highest load.

The log likelihood for the fitted model of -190.23 and the log likelihood chi-squared value of 60.22 indicate that the two parameters are jointly significant at 5%. The z test statistic for the prediction of gender roles was found to be positive ($p=0.001$) and statistically significant at the 0.05 alpha. Pseudo R^2 of 0.38 implies that 38% of gender participation is contributed by gender roles confirming that the gender participation in management of water projects was well attributed to the load in gender roles among the members sampled in the water projects. The observed results indicate that a one unit increase in gender roles test scores result in a .053 unit increase in the ordered log-odds of being in a higher gender participation category while all the other variables in the model are held constant. This implies that project members with higher gender roles load, the lower their contribution in management of water projects and hence the higher the gender inequality in management. Based on these results, the null hypothesis was rejected. Thus gender roles has a statistical significant influence on gender participation in management of water projects in Njoro Sub-county.

Table 20

Ordered Logistic Regression for the Influence of Gender Roles on Gender Participation in Management of Water Projects

Iteration 0: log likelihood = -220.34626

Iteration 1: log likelihood = -190.43756

Iteration 2: log likelihood = -190.23439

Iteration 3: log likelihood = -190.23438

Ordered logit estimates

Number of obs = 203

LR chi2(1) = 60.22

Prob > chi2 = 0.0000

Log likelihood = -190.23438

Pseudo R2 = 0.38

Gender participation	Coef.	Std. Err.	Z	P> z	[95% Conf. Interval]	
Genderroles	.0531819	.015271	3.48	0.001	.0232513	.0831126
_cut1	2.65468	.869481	(Ancillary parameters)			
_cut1	4.10548	.929539				

The Likelihood Ratio (LR) Chi-Square test whether atleast the predictors' regression coefficient is not equal to zero in the model. The number in the parenthesis indicates the degree of freedom of the Chi-Square distribution used to test the LR Chi-Square statistic and is defined by the number of predictors in the model. The LR Chi-Square statistic can be calculated by $-2*(L(\text{null model}) - L(\text{fitted model})) = -2*((-220.35) - (-190.23)) = 60.22$, where $L(\text{null model})$ is from the log likelihood with just the response variable in the model (Iteration 0) and $L(\text{fitted model})$ is the log likelihood from the final iteration (assuming the model converged) with all the parameters. Prob > chi2 indicate the probability of getting a LR test statistic as extreme as, or more so, than the observed under the null hypothesis where all of the regression coefficients in the model are equal to zero. The LR Chi-Square statistic of (60.22) was found when there was no effect on the predictor variables. The small p-value from the LR test, < 0.001, leads to the conclusion that at least one of the regression coefficients in the model is not equal to zero. The p-value was compared to a specified alpha level, in order to accept a type I error, which is typically set at 0.05 alpha. The parameter of the Chi-Square distribution used to test the null hypothesis was evaluated at one (1) degree of freedom.

Cut 1 – is the estimated cutpoint on the latent variable used to differentiate low gender participation from middle and high gender participation when values of the predictor variables are evaluated at zero. Subjects that had a value of 2.75 or less on the underlying latent variable that gave rise to gender participation variable would be classified as low gender participation given that the subjects had few gender roles (the variable of gender roles load is evaluated at zero).

Cut 2 – is the estimated cutpoint on the latent variable used to differentiate low and middle levels of gender participation from high gender participation when values of the predictor variables are evaluated at zero. Subjects that had a value of 5.11 or greater on the underlying latent variable that gave rise to gender participation variable were classified as having high level of gender participations given that the subjects had few gender roles (the variable of gender roles load is evaluated at zero). Subjects that had a value between 2.75 and 5.11 on the underlying latent variable would be classified as middle level gender participation.

Proportional odds ratios for the ordered logit model are obtained by exponentiating the ordered logit coefficients, $e^{\text{coef.}}$, or by specifying the ‘or’ option (see Appendix D for the odd ratio tables). The odds ratio for the influence of level of gender role indicates that for a one unit increase in gender roles, the odds of high gender participation versus the combined middle and low gender participation categories are 1.05 times greater, given the other variables are held constant in the model. Likewise, for a one unit increase in gender roles test score, the odds of the combined high and middle gender participation versus low gender participation are 1.05 times greater, given the other variables are held constant.

The study results indicate that the greater the load in gender roles among the water projects members, the greater the gender inequalities. In the study area, women are expected to be the primary caregivers, especially of the very young and the very old. Family life rests solidly on the shoulders of women in the world as; spouses, parents and caregivers they take on the primary responsibility for ensuring the proper functioning of families and the provision of everyday care and maintenance. Preparing family meals, maintaining hygiene, caring for other family members and a myriad of other chores related to children consume a good part of the day for women in the world (GWA, 2006). For mothers with young children, decisions regarding working hours or whether to work at all often depend on the availability of affordable and reliable childcare.

In most developing countries, water use and management are typically divided by gender. Women and girls are responsible for collecting and using water for household purposes, food production and child-care as well as the care of the elderly and ill, while men make decisions about water resource management and development at both local and national levels (Major, 2009). Access to water is often closely linked to land rights. For example, women and girls from poorer marginalized communities, who often do not have secure land rights, are generally more dependent on open water sources (Muiru 2012). Prevailing gender-based inequalities are also responsible for the fact that women have less means and capability to cope and adapt, and consequently bear a disproportionate burden in the increased competition for water.

According to GWA (2006) in principle, most men support gender equality, but in practice, they fail to structure their lives to promote it. In the past many workers were able to count on help from non-working relatives for childcare and other domestic tasks. Although such traditional family support still exists to a greater or lesser degree in most countries, it is becoming less available with urbanization and the increased labour force participation of women. According to UN Women (2011) fewer employment opportunities for women has discouraged them from following courses in higher education affecting their level of participation in management of water projects.

4.7 Education and Gender Participation in Water Resource Management

The fourth objective in this study sought to establish the influence of education on gender participation in management of water projects in Njoro sub-county. In meeting this objective a null hypothesis (H_{04}) level of education has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county was formulated and analysed using ordered logit regression. As far as management of water projects is concerned, both men and women are expected to participate. In the present time, women are as competent as men in project management. The expectation is that the participation of men and women in management of water projects should be on an equal basis. However, studies have revealed that women are under-represented in water resource management at all levels of management worldwide as a result of low levels education attainment. This study sought to examine how education affects gender participation in management of water resource projects.

4.7.1 Highest Level of Education Attainment Among the Respondents

From the study results education attainment is of great importance in participation in water resource management projects. The highest level of education attainment of the respondents is summarized in Table 21.

Table 21

Highest Level of Education Attainment of the Participants

Gender	Non-formal Education		Primary		Secondary		Tertiary College		University	
	Freq	Per	Freq	Per	Freq	Per	Freq	Per	Freq	Per
Male	3	1.48%	24	11.82%	74	36.45%	50	24.63%	9	4.43%
Female	2	0.99%	20	9.85%	6	2.96%	12	5.91%	3	1.48%
Total	5	2.47%	44	21.67%	80	39.41%	62	30.54%	12	5.90%

Education is of key importance as a means of empowering women and men with the necessary skills and knowledge to manage water project for efficient and effective service delivery. Higher levels of education increase the probability of women and men to engage in management activities such a project planning, operation and maintenance, plumbing, accounting and other management activities. High literacy levels increases gender participation in management of water projects. A study conducted by World Bank (2009) reveals that illiteracy is a major constraint facing women in water resource management. Most rural women are unable to understand and utilize technical information because they lack basic formal education. In addition, as noted by Ross (2009) education plays a significant role in positively influencing the status of women in decision-making at all levels of management. Highly educated men and women are likely to make a higher contribution to decision making than uneducated ones (Gunduz, 2011).

Low levels of education attainment among rural women has led to gender inequality in participation in water resource management. The need for male and female representation in water project leadership positions in water resource management is necessary to provide a gendered perspective on water project management, and to ensure social justice through gender equity at leadership and decision making levels. For women to be active participants in the change and development process, they must be present and provide the necessary skills

and understanding needed to participate effectively in water management leadership and policy-making at both local and national levels (Chowwen, 2007).

4.7.2 Influence of Level of Education on Gender Participation in Management of Water Projects

The study tested the fourth hypothesis (H_{04}) which stated that level of education has no statistical significant influence on gender participation in management of water projects in Njoro Sub-county. This was done using ordered logistic regression. Table 22 indicates an output of ordered logistic regression analysis. The data was collected from 203 respondents. The outcome measure in this analysis was the level of gender participation (gender participation); low, medium and high. Variable, gender participation, is treated as ordinal under the assumption that the levels of gender participation status have a natural ordering (low to high), but the distances between adjacent levels are unknown. Education (Highest Level of Education) was measured as an ordinal variable (where 0 = no formal education, 1 = Primary, 2 = Secondary, 3 = Tertiary/college and 4 = University) showing the extent of formal education acquired by the respondent.

The log likelihood for the fitted model of -200.07 and the log likelihood chi-squared value of 40.56 indicate that the two parameters are jointly significant at 5%. The z test statistic for the prediction of education level was found to be positive and statistically significant at the 0.05 level when ($p=0.000$). Pseudo R^2 of 0.320 means that 32.0% of gender participation is attributed to levels of education confirming that a significant level of gender inequality was associated with low levels of education among the members of the water projects. The observed results indicate that a one unit increase in level of education test scores result in a 1.03 unit increase in the ordered log-odds of higher gender participation category while all the other variables in the model are held constant. This implies that the greater the highest level of education attainment the lower the gender inequalities in participation in management of the water projects. Based on these results, the null hypothesis was rejected. Thus education has a statistical significant influence on gender participation in management of water projects in Njoro Sub-county.

Table 22

Ordered Logistic Regression for the Influence of Level of Education Attainment on Gender Participation in Management of Water Projects

Iteration 0: log likelihood = -220.34526
Iteration 1: log likelihood = -200.12403
Iteration 2: log likelihood = -200.06565
Iteration 3: log likelihood = -200.06564

Ordered logit estimates

Number of obs = 203
LR chi2(1) = 40.56
Prob > chi2 = 0.0000
Pseudo R2 = 0.32

Log likelihood = -200.06564

Gender participation	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Level of education	1.03032	0.347967	-2.96	0.000	-1.71232	-0.34831
_cut1	.764319	.204289	(Ancillary parameters)			
_cut1	1.41461	.225507				

The Likelihood Ratio (LR) Chi-Square test that at least the predictors' regression coefficient is not equal to zero in the model. The number in the parenthesis indicates the degree of freedom of the Chi-Square distribution used to test the LR Chi-Square statistic and is defined by the number of predictors in the model. The LR Chi-Square statistic can be calculated by $-2*(L(\text{null model}) - L(\text{fitted model})) = -2*((-220.35) - (-200.07)) = 40.56$, where $L(\text{null model})$ is from the log likelihood with just the response variable in the model (Iteration 0) and $L(\text{fitted model})$ is the log likelihood from the final iteration (assuming the model converged) with all the parameters. Prob > chi2 indicate the probability of getting a LR test statistic as extreme as the one observed under the null hypothesis where all of the regression coefficients in the model are equal to zero. The LR Chi-Square statistic of (40.56) was found when there was no effect of the predictor variables. The small p-value from the LR test, <0.000, leads to the conclusion that at least one of the regression coefficients in the model is not equal to zero. This p-value is compared to 5% alpha level, in order to accept a type I error. The parameter of the Chi-Square distribution used to test the null hypothesis is evaluated at one (1) degree of freedom.

Cut 1 – This is the estimated cutpoint on the latent variable used to differentiate low gender participation from middle and high gender participation when values of the predictor variables are evaluated at zero. Subjects that had a value of 0.764 or less on the underlying latent variable that gave rise to gender participation variable was classified as low gender participation given the subjects had no formal education (the variable level of education evaluated at zero).

Cut 2 – This is the estimated cutpoint on the latent variable used to differentiate low and middle levels of gender participation from high gender participation when values of the predictor variables are evaluated at zero. Subjects that had a value of 1.412 or greater on the underlying latent variable that gave rise to gender participation variable were classified as having high level of gender participations given the subjects had no formal education (the variable level of education evaluated at zero). Subjects that had a value between 0.764 and 1.412 on the underlying latent variable would be classified as middle level gender participation.

Proportional odds ratios for the ordered logit model are obtained by exponentiating the ordered logit coefficients, e^{coef} , or by specifying the ‘or’ option (see Appendix E for the odd ratio tables). The odds ratio for the influence of level of education level indicates that for a one unit increase in education level, the odds of high gender participation versus the combined middle and low gender participation categories are 1.1203 times greater, given the other variables are held constant in the model. Likewise, for a one unit increase in education level test score, the odds of the combined high and middle gender participation versus low gender participation are 1.1203 times greater, given the other variables are held constant.

From the study results education attainment have some influence in participation hence affecting gender representation in management position. As a result of difference in education attainment among men and women, representation of women remains minimal and their needs and contributions in management of the projects ignored even in water projects that have gender policy in place. It can be deduced that education play an important role in empowering women with the necessary skills, knowledge and self-confidence to unlock their potential in participation in public forums and decision making in management activities. Education is fundamental to development of human resource capacities for sustainable economic growth and improvement of resource management. By imparting new skills and

knowledge in people, education expands human capabilities, increases labour productivity and enhances essential participation and partnerships in nation building.

Education is a vital tool in achieving greater autonomy, empowerment of women and men and addressing gender gaps in the distribution of opportunities and resources (Aikman & Unterhalter, 2013). Few women are participating in water sector leadership largely due to the scarcity of women water professionals, entrenched cultural and traditional attitudes, gender stereotyping, and perceptions that women lack managerial and technical skills. No individual factor can adequately explain the absence of women in water governance, policy making, and water agencies. Rather, it is the confluence of the multiple elements that work in tandem to keep women at the margins of water leadership.

Undoubtedly, there are a limited numbers of women water professionals engineers, water technicians, environment specialists, and scientists who are qualified and ready to fill professional positions in the water sector. Gender streaming and stereotyping in secondary education functions to steer girls away from science, technology, engineering, and medicine subjects at university. Hence, few women emerge from university with qualifications in engineering and the sciences, limiting their future employment opportunities as water professionals. Even technical and vocational education programs that train water technicians are highly gender-segregated.

According to Aikman and Rao (2010) women still constitute the large majority of the world's illiterate population. In several developing countries, gender gaps in education and literacy persisted. Without equitable access to quality education, women do not have the means to build their knowledge, capacity and skills to access well-paid, formal sector jobs and attain positions of leadership. Unless gender gaps in literacy and education were addressed, the next generation of girls would be similarly marginalized from leadership roles. Other issues in relation to women's access to education were rural- urban disparities in levels and quality of education (Azam, 2013).

4.7.3 Perception of Level of Education and Project Management

In determining the perception of project members on influence of education on management items were constructed to measure perception on a scale of 1 to 5 point likert-type survey instrument. That is: strongly disagree=1 Disagree=2, Undecided=3, Agree=4 and Strongly

agree=5. The perception of the level of education attainment on gender participation was condensed into two groups in a continuum of either Disagree (which comprises of strongly disagree, Disagree and Undecided) or Agree (which comprises of Agree and Strongly agree) and summarized in Table 23.

Table 23

Extent to which Education Influence Participation in Management

Statements	Disagree	Agree	Mean	Std. Dev
Education influence on management activities	31(15.2%)	172(84.8%)	4.31	1.11
Education influence on leadership positions	72(35.5%)	131(64.5%)	3.71	1.13
Education influence on division of labour	188(92.6%)	15(7.4%)	2.29	0.87
Education influence on operation activities such as plumbing and meter reading	172(84.8%)	31(15.3%)	2.15	1.01
Education influence on contribution of ideas during meetings	170(83.7%)	33(16.3%)	2.15	1.08
Education influence on water utilization	185(91.1%)	18(8.9%)	1.98	1.01
Education influence on access to information on management	203(100.0%)	0(0.0%)	1.79	0.74

This is an indication that education level has a direct impact on project management as most respondents were in agreement that education level had either a higher or a lower impact on management. Women's under-representation in water resource management positions may be attributed to lower education attainments of women as a result of variety of reasons, such as lack of necessary aspirations, lack of confidence that they will succeed, gender-based socialization, fear of failure, and lack of competitiveness. Some women have indicated that the tasks of administration are not of interest to them because of their low levels of education attainment (DeJaeghere, 2013). According to Kariuki (2013) when women come to understand that management of the water projects takes many forms, they are also likely to show more interest in becoming administrators. Likewise, studies of women administrators indicate that they do the job differently than the way men do, focusing more on transparency, efficiency and timely delivery of water services (FAO, 2012).

4.7.4 Gender Most Affected by Level of Education in Participating in Management Activities

The study sought to examine the most affected gender by education in executing management activities and the results summarized in Figure 13.

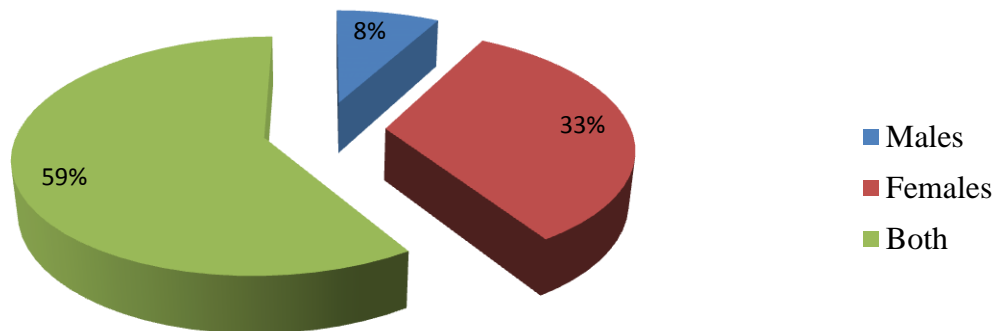


Figure 13. Gender Most Affected by Level of Education

From the study results, education remains a major challenge for women's participation in water resource management in the study area. Despite the many gains realized in the education sector, such as free education, boys are still much ahead of girls in enrolment especially at secondary schools and colleges this affects women participation in leadership positions. Efforts have been intensified to bridge the gender education gap. But achievement of this goal in many parts of the world, and Africa in particular, has been rather slow (UNESCO, 2013). There exist significant differences between females and males in the learning process as measured by internal efficiency indicators including dropouts, repetition, completion and transition. According to Anonymous (2012) women's literacy rate has significantly increased as a result of positive government policies and strategies. However, despite progress in education as a whole, gender disparity remains a challenge as 16% of women in Kenya still lack basic literacy skills, compared with 9% of men. The failure to promote and retain girls in secondary education is probably one factor negatively affecting the slow progress in women's literacy.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the findings, the conclusions and recommendations drawn from the study. In addition, suggestions for further research are given. The study sought to establish the influence of selected socio-cultural factors on gender participation in management of water projects in Njoro sub-county. This was done by analyzing the selected social cultural factors (level of education, gender roles and land tenure) on their contribution in affecting gender participation in management of water projects. The socio-cultural factors constituted the independent variable of the study, while gender participation in management constituted the dependent variable.

5.2 Summary

The study specifically sought to determine influence of selected socio-cultural factors (level of education, gender roles and land tenure) on gender participation in management in different water projects in the sub-county with varied socio-cultural influence on gender. Statistical tests specifically ordered logic tests was used to test the hypotheses of the study along with descriptive tests including: percentages, frequencies mean, standards deviation. Specifically, this study examined the following areas:

- i) The influence of two-thirds gender rule on gender participation in management of water projects in Njoro Sub-county.
- ii) The influence of land tenure on gender participation in management of water projects in Njoro Sub-county.
- iii) The influence of gender roles on gender participation in management of water projects in Njoro Sub-county.
- iv) The influence of level of education on gender participation in management of water projects in Njoro Sub-county.

Primary data was collected using questionnaires for the respondents and interview schedules for the key informants (divisional water officers and water project chairpersons). The results were summarized based on the study objectives.

5.2.1 Influence of Two-thirds Gender Rule on Gender Participation in Management of Water Projects

Involvement of community members was evident in management of water projects. The study results indicate that two-thirds gender rule had a statistical significant influence on gender participation in management of the water projects. The study results further indicates that gender inequality exists in management of the water projects and it is attributed to the existence or absence of gender policies. Failure to implement two-thirds gender rule affects independent choices in decision making leading to inefficient delivery of services and unstainable water projects. The involvement of women in management of water projects was affected by landownership as the main criteria for membership in water projects affecting realization of two-thirds gender rule.

In the study area most water projects leaders were either appointed or elected democtratically disregarding the guidance of two-thirds gender rule. This lead to low women representation in management of the positions. The aim of two-thirds gender rule was to ensure that fairness is exercised in decision making to avoid biasness which may lead to gender inequality in management of water projects. Despite this advocacy women representation at management level remains low affecting womens contribution in management thus leading to water project not meeting the practical and strategic needs of water at household level. From the study results leadership positions that were seen to be superior in management were dominated by males while those that were seen to be inferior were dominated by females. For example some of the activities which were dominated by males include; managerial position, planning, human resource management, plumbing and accounting. These activities are seen to require higher level of education and technical skills which women were seen not to have. Women were assigned activities such as kiosk attendants and positions that are less influential in decision making and management of the water projects.

The implementation of two-thirds gender rule faced several barriers which affected women representation in management activities in the water projects. This include cultural prejudices, Financial status, land ownership, lack of awareness and unwillingness by project leaders to implement two-thirds gender rule were highlighted as some of the challenges. It was also noted that the study area politicians and church leaders interfered with the management of water projects which were initiated through the CDF and church. For example the leaders of CDF initiated water projects were appointed in management position

by the area politician. Usually men were more preferred by politicians than women to hold leadership posts in as they were seen to be more influential in pushing their political agendas than women. It was also noted that women feared management challenges, and felt that they cannot handle as a result of the domestic chores, insufficient support from female water project members to run the water projects and also low academic achievements.

5.2.2 Influence of Land Tenure on Gender Participation in Management of Water Projects

The results indicate that the coefficient for land is statistically significant. thus land had a statistical significant influence on gender participation. The results revealed that gender participation was contributed by land tenure. The study results confirms that gender participation in management of water projects is attributed to type of land tenure among the sampled projects, where individuals with individual land rights had more rights to participate in management than those who had communal land rights. In the study area, land was commonly held by household-heads who are predominantly males, hence an indication that management of water projects is a male affair in the study area.

Communities in the study area lacked provisions for women to hold land rights independently of their husbands or male relatives thus affecting women participation. The study results revealed that the predominant form of transfer of land rights in Njoro sub-county is through legal rights and customary laws during inheritance, where culture dictates that only sons and not daughters inherit from their parents. The study results further reveal that land ownership has a greater influence on gender participation and other management activities and influence water connection, division of labour, election of members, water utilization, control and operation of water system and the likelihood of one becoming a member in the water projects. Although women have a primary responsibility for managing water projects, they are constrained from participating in management level as a result of lack of land rights, which influence membership and voting rights in the water projects.

From the study results land ownership defines social status and power relation in the management of water resource projects. Land also influences the power structures and relationship both within and outside the household. From the study results land is a major asset in water resource management as it dictates participation in most of the activities in management such as membership, water connection and participation in operation and

maintenance. All genders were affected by land tenure in management of water projects but the most affected were females than males. Although the participation of women in management of water users association projects have increased, two-thirds gender rule can only be attained when restrictions to land ownership are removed, as most of the ethnic communities in the study area land, rights were dominated by men. Inequality in land rights is the most critical element in women empowerment and it challenges various social and cultural inequalities that women face on a daily basis.

Land rights forms the heart of the increased bargaining power of women either as an individual or as a group. Women continue to be seen as non-participant in water management as they lack legal claimer right to land and all status and power that land tenure holds. Most women do not own land due to underlying strategic constraints caused by culture: where women have no equitable division in autonomy over access to and control over land resources which in turn affects independence in participation in project activities and decision making by women in public domains. It was also found out that land tenure plays one of the vital roles in influencing water project member's position in decisions making level, membership in the project and utilization of water. Women who engage in water resources management do so by being household's heads or from their spouses authority, or by virtue of owning land through individual land tenure.

5.2.3 Influence of Gender Roles on Gender Participation in Management

The study results indicate that the greater the load in gender roles the more the inequality in participation in management. Gender roles had a significant influence on gender participation in management. Gender roles in the study area were distributed according to biological difference between males and females. Women's responsibilities in domestic, communal and productive roles slowed their participation in management of the water projects more than men. The unequal distribution of roles affects women more than males leading to a high burden of gender roles. Gender roles affected women time and availability to attend meetings where information is passed and decisions are made on issues of management. This make women to juggle between the demands of farm work and domestic chores thus restricting them from taking on roles that demand long hours in public forums such as water management. Low participation of women in productive roles which generate some income had an impact on women's contribution in water management activities such as payment of registration fee and monthly water tariffs which require finances.

The absence of women in local meetings and management committees as a result of high burden in gender role load means that access to information and decision making is a men's affair even on issues that women have a special knowledge and interest. Heavy gender roles limit the time women have to pursue opportunities as well as limit their mobility to attend project management activities. This implies that the greater the workload in gender roles among the water projects members, the greater the gender inequalities in participating in project activities. Although there is no documentation that being a housewife diminishes managerial ability, there still was a belief that such responsibilities inhibit the ability of women to perform their jobs as water project managers and therefore, such responsibilities make women undesirable candidates for administrative positions. At the same time, women sometimes say that family responsibilities keep them from seeking administrative positions, not because they cannot match to the task but because they believe the burden would be too high for their families and themselves. Women have universal responsibilities for water supply throughout the World; Moriarty *et al.*, (2004) argues that it is important to work with women in all water development projects, recognizing their multiple roles as domestic and productive water users, and this should not be overlooked by planners and policy makers. Water has never been a 'free good' for the poor, particularly women, who bear a disproportionate burden with respect to their access to and control over water resources (GWA, 2003).

5.2.4 Influence of Education on Gender Participation in Management of Water Projects

From the study results education level had a statistically significant influence on gender participation in management. Gender difference in access to education is a key contributor to inequality in women's participation in management of water projects in the study area. This implies that the greater the highest level of education the higher the chances to be elected or appointed in management position. Individuals who had no formal education were excluded from participating in management position since it was a precondition for leadership. The study showed that low education attainment affected participation of men and women as they were afraid to take part or be fully involved in project activities thinking that they cannot make worthwhile contributions in project management. The study results further confirm that a significant level of gender inequality is associated with the lowest level of education among the members of the water projects. It emerged that Women's under-representation in management positions may be attributed to low levels of women's education attainment.

Difference in academic achievements between men and women was a key contributor to inequality in distribution of roles in management and participation in project activities such as plumbing, managerial and accounting which required technical skills. Despite the improved literacy level in the study area, some illiteracy levels have been reported with some males and females unable to read and write although more females than males were affected which is still a challenge in the rural areas. This usually leads to inferiority complex of women and may cause the project members and especially women to be afraid to take part or be fully involved, thinking they cannot make worthwhile contributions in project management. Education attainment up to college or tertiary level positively correlated with men and women knowledge of water project management and with their participation in project activities.

5.3 Conclusions

Based on the findings of this study the following conclusions were made:

- 1) Community participation was experienced across all the water projects but gender inequality in management was evident in the water projects. Two-thirds gender rule had a significant influence on gender participation in management of the water projects. This was attributed by existence or absence of two-thirdss gender rule. Failure to implement two-thirds gender rule in the water project has affected the realization of gender equity in management of the water projects. This have in-turn led to failure of the water projects to meet practical and strategic needs of women in water management. In terms of practical needs, women need to access water as a basic service to ensure the normal functioning of the family unit and sustain a minimum quality of life. In terms of strategic needs of women, the barriers that prevent women and men from operating at the same level , need to be removed and women need to be empowered to enjoy the same status as men to realize their full potential and contribute to national, social, cultural and economic development. Several barriers were highlighted in achieving two-thirdss gender rule which include; lack of land rights, social status education levels among others. This had an impact on sustainability and efficiency in delivery of water services by water projects.
- 2) Land tenure had a significant influence on gender participation in management of water projects. Land tenure was the key contributing factor for gender participation in the management and membership in the water project affecting more women than men. Land is commonly transferred to men than women during inheritance as a result

of patriarchal and customary laws. The type of land tenure (individual or communal) influenced the magnitude of gender participation in the water projects. Individuals who owned land individually had a greater chance to participate and influence project activities than individual who owned land in communal land tenure.

- 3) The work load of gender roles influenced gender participation in management of the water projects. The study results revealed that the sex which had more work load in terms of gender roles affected participation. Women are over burdened with reproductive roles which involves the care and maintenance of the household and its members including bearing and caring for children, food preparation, water collection, shopping, housekeeping and family health care. They are also over burdened with community work than men hence affecting their time and availability to contribute and participate in management of water project activities. The high burden of gender roles on women made them to shy away from availing themselves or taking up leadership positions for fear of compromising their domestic and communal roles.
- 4) Level of education had a significant influence on gender participation in management of the water projects. The highest education attainment of a project member played a key role in influencing election or appointment of an individual to leadership position as it was a precondition for leadership in most of the water projects. Education status also translated to social status in terms of superiority or inferiority in influencing decision making in the water management hence affecting gender participation. Women and men who had low education attainment feared to take leadership position for fear of being criticized.

5.4 Recommendation

This study has presented and discussed the results of a research carried out in Njoro sub-county, Nakuru County with the objective of finding out the influence of selected socio-cultural factors on gender participation in water resource management projects. Therefore the following was recommended:

1. The Kenya Government should provide an enabling environment and enact legislations that supports implementation of two-thirds gender rule. Water projects should have affirmative action in their project by-laws in order to ensure two-thirds gender rule is fully operationalized in order to guide election or appointment of

project leaders in management positions. This will also enable women not to feel that the position allocated through affirmative action are inferior. The mode in which leaders are elected or appointed into leadership position is critical and can only be effective if women are empowered to participate and influence change. This will enable women to volunteer their candidature for elective and appointment posts in water projects in order to champion their practical and strategic needs, since they interact with water more than men in their daily activities.

2. The policy on land rights transfer should be enhanced in the rural areas in order to encourage parents to distribute land to both boys and girls during inheritance hence increase more women's land ownership thus increase their participation and membership in water projects.
3. To overcome the problem of lower education attainment, competence based training on water project management should be introduced which focuses on relevant areas of water project management in order to enhance women and men ability to carry out project management activities such as plumbing, planning and human resource management hence increase gender participation. This would minimize the perception that contribution and holding of leadership position should always emanate from level of education attainment.
4. Gender roles should be shared according to capability and age and not according to biological and cultural stereotyping in order to create time for women to participate in project activities. Project officials should also be provided with incentives such as sitting or responsibility allowances in terms of monetary value in order to spare their time to contribute in management. Provision of sitting or responsibility allowance can encourage more women and men to participate in management activities as they can have an extra income to hire workers to carry-out the activities they intend to undertake when they attend project management activities. This will encourage the officials create more time to carryout management activities.
5. The ministry of water and irrigation and all stakeholders involved in initiating water projects should ensure that socio-cultural factors affecting gender participation are put into consideration during initiation and commencement of the water project cycle in order to address gender inequality in project management.
6. Membership criteria in the water projects should be reviewed with the aim of increasing women's and young men's membership and participation in management of the water projects.

7. Voting procedures and conditions for appointing or electing leaders should be reviewed in all water project by-laws to narrow the gender gap in leadership at all levels of management in the water sector in order to have greater involvement of women in decision making through affirmative action.
8. The national gender and equality commission should be more pro-active in advising water project stakeholders to embark on formulation of project by-laws which are gender sensitive.

5.5 Areas for Further Research

This study was conducted in Njoro Sub-county and focused on selected socio-cultural factors influencing gender participation in management of water resource projects. From the findings the study makes the following recommendations for further research.

1. Studies may also be carried out similar to the current study in arid and semi-arid regions in order to give more insights on management of water projects in areas experiencing acute water shortage.
2. In order to generalize these findings to a wider scope, a similar study need to be carried out involving counties with diverse socio-cultural influence on a larger sample and focusing on all socio-cultural factors that may affect gender participation in water resource management.
3. There is need to investigate whether there are other factors a part from socio-cultural factors that may affect gender participation in management of water resource projects.
4. There is need to investigate how local leadership especially the member of county assembly and member's of parliament affect the realization of two-thirds gender rule in constituency development funds initiated water projects.
5. It would be critical to find out why land tenure was critical in contribution in gender participation compared to other factors such as level of education and gender roles in management which were examined in this study. This study should be tied to another study which may want to establish, in relative terms, why cultural factors are perceived as the main factors influencing land acquisition in patriarchal society.
6. Studies may also be carried out to establish specific education attainments among women and men and their contribution in management of water projects.
7. Further work may also be preferred on the role of private sector in supply of water and gender participation in private public partnership management of water projects.

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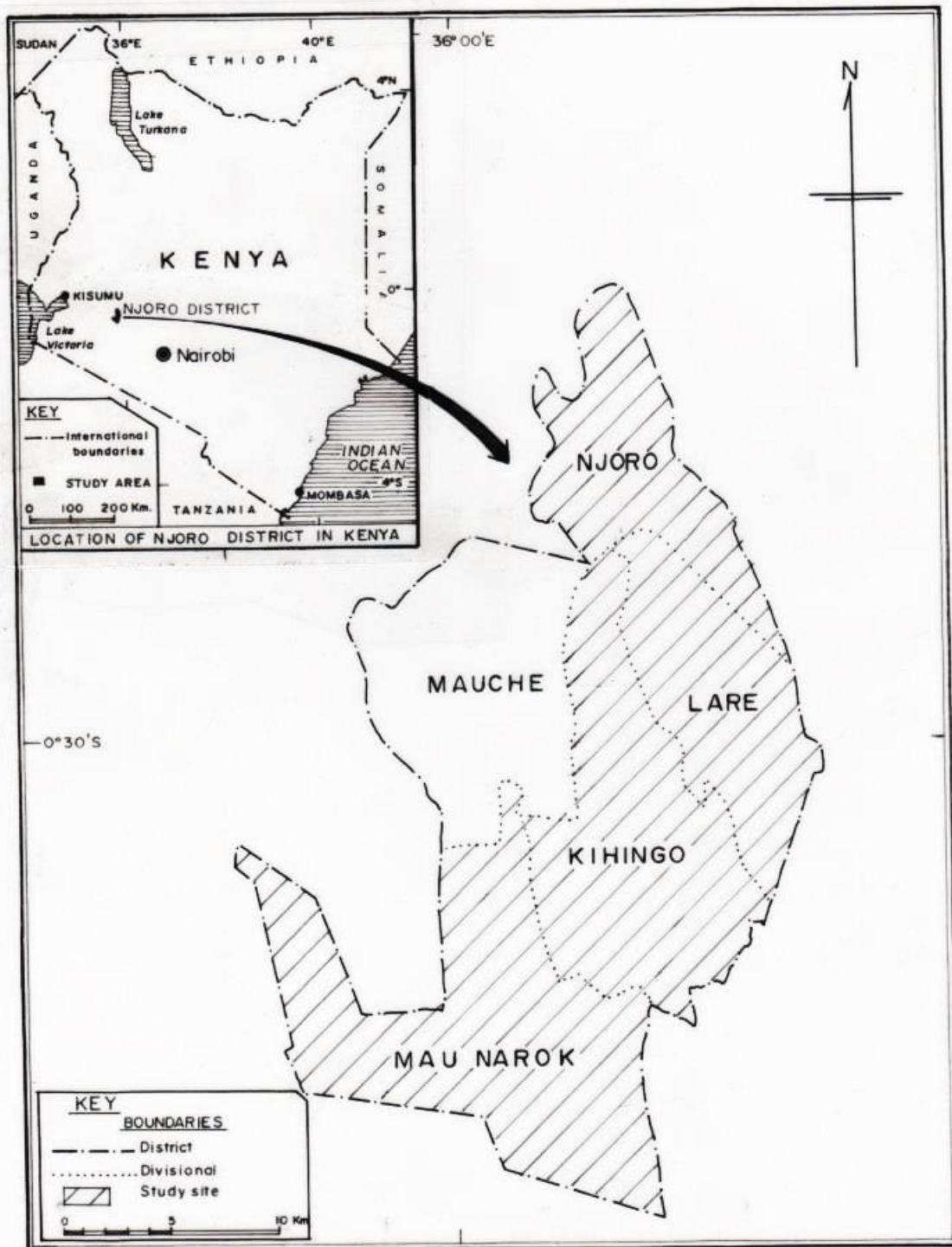
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APPENDICES

APPENDIX A: Map of Njoro Sub-county



APPENDIX B: Ordered Logit Regression Computer Print Out on Influence of Two-thirds Gender Rule on Gender Participation in Water Management

ologit gp genderpolicy

Iteration 0: log likelihood = -210.58254
 Iteration 1: log likelihood = -195.01878
 Iteration 2: log likelihood = -194.80294
 Iteration 3: log likelihood = -194.80235

Ordered logit estimates	Number of obs	=	203
	LR chi2(1)	=	31.56
	Prob > chi2	=	0.00001
Log likelihood = -194.80235	Pseudo R2	=	0.312

gender participation/	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
genderpolicy	.4823977	.2796939	1.72	0.041	-1.030588 .0657922

	_cut1	2.75468	.869481		(Ancillary parameters)
	_cut2	5.10548	.929539		

Iteration Log^a

Iteration 0: log likelihood = -210.58254
 Iteration 1: log likelihood = -195.01878
 Iteration 2: log likelihood = -194.80294
 Iteration 3: log likelihood = -194.80235

Odds Ratio Interpretation

ologit gender participation genderpolicy, or

Iteration 0: log likelihood = -220.58254
 Iteration 1: log likelihood = -195.01878
 Iteration 2: log likelihood = -194.80294
 Iteration 3: log likelihood = -194.80235

Ordered logit estimates	Number of obs	=	203
	LR chi2(1)	=	31.56
	Prob > chi2	=	0.00001
Log likelihood = -194.80235	Pseudo R2	=	0.312

gender participation	Odds Ratio ^a	Std. Err.	z	P> z	[95% Conf. Interval] ^b
genderpolicy	.6173015	.1726554	1.72	0.041	.3567972 1.068005

APPENDIX C: Ordered Logit Regression Print Out on Influence of Land Tenure on Gender Participation in Water Management

ologit gender participation landright

Iteration 0: log likelihood = -220.34626
 Iteration 1: log likelihood = -180.17816
 Iteration 2: log likelihood = -180.17568
 Iteration 3: log likelihood = -180.17567

Ordered logit estimates		Number of obs	=	203
		LR chi2(1)	=	80.34
		Prob > chi2	=	0.0030
Log likelihood = -180.17567		Pseudo R2	=	0.2530

gender participation Conf. Interval]	Coef.	Std. Err.	z	P> z	[95%
landrights	.0300201	.0165861	1.81	0.036	-.0024882 .0625283
_cut1	2.534234	.815458	(Ancillary parameters)		
_cut2	4.170361	.981317			

Iteration Log^a

Iteration 0: log likelihood = -220.34626
 Iteration 1: log likelihood = -180.17816
 Iteration 2: log likelihood = -180.17568
 Iteration 3: log likelihood = -180.17567

Odds Ratio Interpretation

ologit gender participation landrights, or

Iteration 0: log likelihood = -220.34626
 Iteration 1: log likelihood = -180.17816
 Iteration 2: log likelihood = -180.17568
 Iteration 3: log likelihood = -180.17567

Ordered logit estimates		Number of obs	=	203
		LR chi2(1)	=	80.34
		Prob > chi2	=	0.0000
Log likelihood = -180.17567		Pseudo R2	=	0.2530

gender participation Conf. Interval] ^b	Odds Ratio ^a	Std. Err.	z	P> z	[95%
landrights	0.760475	.0170916	1.81	0.070	.9975149 1.064525

**APPENDIX D: Ordered Logit Regression Print Out on Influence of Gender Role on
Gender Participation in Water Management**

ologit gender participation gender roles

```
Iteration 0:   log likelihood = -220.34626
Iteration 1:   log likelihood = -190.43756
Iteration 2:   log likelihood = -190.23439
Iteration 3:   log likelihood = -190.23438
```

```
Ordered logit estimates           Number of obs   =           203
                                LR chi2(1)          =           60.22
                                Prob > chi2         =           0.0000
Log likelihood = -190.23438      Pseudo R2       =           0.38
```

gender participation	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
-----+-----					
genderroles	.053181	.015271	3.48	0.001	.0232513 .0831126
-----+-----					
_cut1	2.75467	.869481			(Ancillary parameters)
_cut2	5.10548	.929538			

Iteration Log^a

```
Iteration 0:   log likelihood = -220.34626
Iteration 1:   log likelihood = -190.43756
Iteration 2:   log likelihood = -190.23439
Iteration 3:   log likelihood = -190.23438
```

ologit gender participation genderrole, or

```
Iteration 0:   log likelihood = -220.34626
Iteration 1:   log likelihood = -190.43756
Iteration 2:   log likelihood = -190.23439
Iteration 3:   log likelihood = -190.23438
```

```
Ordered logit estimates           Number of obs   =           203
                                LR chi2(1)          =           60.22
                                Prob > chi2         =           0.0000
Log likelihood = -190.23438      Pseudo R2       =           0.38
```

gender participation	Odds Ratio ^a	Std. Err.	z	P> z	[95% Conf. Interval] ^b
-----+-----					
gender roles	1.054622	.0161052	3.48	0.000	1.023524 1.086664
-----+-----					

APPENDIX E: Ordered Logit Regression Print Out on Influence of Education on Gender Participation in Water Management

ologit gender participation education level

```
Iteration 0: log likelihood = -220.34526
Iteration 1: log likelihood = -200.12403
Iteration 2: log likelihood = -200.06565
Iteration 3: log likelihood = -200.06564
```

```
Ordered logit estimates      Number of obs   =   203
                             LR chi2(1)            =   40.56
                             Prob > chi2            =   0.0000
Log likelihood = -200.06564  Pseudo R2       =   0.32
```

gender participation	Coef.	Std. Err.	z
P> z [95% Conf. Interval			
-educationlevel	1.030315	.3479667	-2.96
	0.000	-1.71231	-.3483126
_cut1	.764318	.204288	
_cut2	1.414616	.225507	

(Ancillary parameters)

Iteration Log^a

```
Iteration 0: log likelihood = -220.34526
Iteration 1: log likelihood = -200.12403
Iteration 2: log likelihood = -200.06565
Iteration 3: log likelihood = -200.06564
```

Odds Ratio Interpretation

ologit gender participation education level, or

```
Iteration 0: log likelihood = -220.34526
Iteration 1: log likelihood = -200.12403
Iteration 2: log likelihood = -200.06565
Iteration 3: log likelihood = -200.06564
```

```
Ordered logit estimates      Number of obs   =   203
                             LR chi2(1)            =   80.34
                             Prob > chi2            =   0.0000
Log likelihood = -180.17567  Pseudo R2       =   0.32
```

gender participation	Odds Ratio ^a	Std. Err.	z	P> z	[95% Conf. Interval] ^b
educationlevel	1.12031	.3479667	-2.96	0.003	-1.71231 - .3483126

APPENDIX F: Questionnaire for the Registered Water Project Member

Dear Project Member

I am a post graduate student conducting a research for an award of doctor of philosophy. This questionnaire is meant to solicit for information to concerning influence of selected socio-cultural factors on gender participation in water resource projects in Njoro sub-county. The information will help the researcher to suggest ways of curbing the problem of gender disparities in management of water resource project. The information you provide will not only be used for the purpose of this research only but also be treated as confidential. Therefore, DO NOT write your name or that of your project.

Yours cordially

Wambu Charles (Researcher)

Instructions

Please respond to each question as requested.

Please put a tick () mark in the space provided.

Section A: Background Information

1. What is your division?..... Location:.....
2. What is your age?_____ [years]
 - a) 21-30yrs []
 - b) 31-40yrs []
 - c) 41-50yrs []
 - d) 51-60yrs []
 - e) 61-70yrs []
 - f) Above 71yrs []
3. What is your gender? Male [] Female []
4. How much water in cubic meters do you consume per month?
 - (i) 0 – 3 m³ [] (ii) 4 – 6 m³ []
 - (iii) 7 – 10 m³ [] (iv) 10 m³ and above []
5. Approximately how much do you pay for your monthly water bills?
 - i) 0-200kshs [] ii) 201-400kshs []
 - iii) 401-600kshs [] iv) 601-800kshs []
 - v) 801-1000kshs [] v) Above 1000 []
6. What factors influence the cost of water bills per month?
 - i) Fixed charges [] ii) Charged according to consumption [] iii) Both []

7. What is the size of your household?
 (i) 1-5 [] (ii) 6-10 [] (iii) 11-15 []
 (iv) 15-20 [] (v) 21 & Above []
8. What is the criterion of membership in the water project you are registered in?
 (i) Land ownership [] (ii) Membership fee []
 (iii) Household head []
9. Which type of water system are you connected to?
 (i) Church water supply [] (ii) NARUWASCO water []
 (iii) Community water supply []
10. How much is the connection fee? _____ Kshs.
 (i) 0-1000Ksh [] (ii) 1001-10,000 Ksh []
 (iii) 10,001-20000 Kshs [] (iv) 20001-30,000 Kshs []
 (v) 30,001 Kshs & Above []
11. Who initiated the water and sanitation project in your area?
 (i) Government [] (ii) Community []
 (iii) NGO/Donors [] (iv) Government/community initiatives []
 (v) CDF [] (vi) NARUWASCO []
 (vii) Others (specify).....
12. How do you utilize the water supplied by the water project?
 (i) Domestic use [] (ii) Livestock use []
 (iii) Irrigating crops [] (v) Other economic activities (specify).....
13. For how long have you been a registered member in the project?
 (i) 0-5yrs [] (ii) 6-10 yrs []
 (iii) 11-15 yrs [] (iv) 16yrs and above []
14. What positions are you holding at the moment in the water project you are registered in?
 (i) Chairperson [] (ii) Vice chairperson []
 (iii) Secretary [] (iv) Vice secretary []
 (v) Treasurer [] (vi) General membership []
 (vii) Others specify.....
15. For how many years have you served in the above position? _____ years.
16. When are project management meetings mostly held?
 (i) Weekdays [] (ii) Weekends []
17. How frequent are project meetings held?

- (i) Twice per month [] (ii) Once per month []
 (iii) Once per three months [] (iv) Twice a year []
 (v) Once per year [] (vi) Others (specify)_____

Section B: Gender Participation in Management of Water Projects

18. How are the leaders/officials in your water project selected?

- i) Through democratic election []
 ii) Through appointments []

19. Who dominate in the following activities in management of water projects?

Management activity	Male	Female	Both
i) Planning			
ii) Human resource management			
iii) Control of daily operations			
iv) Collection of revenue			
v) Record keeping			
vi) Procurement			
vii) Others: _____ _____			

20. To what extent do the following factors limit implementation of two-thirds gender rule in management of water projects? Rate your perception using the scale in which VL= Very low, L = Low, M = Moderate, M = Much, VH = Very high

Hindrances	Extent				
	VL	L	M	H	VH
Financial resource					
Lack of information					
Lack of land rights					
Triple gender roles					
Political interference					
Procedures and requirements for voting					
Level of education					
Unwillingness to take positions by women					
Unwillingness by leaders to implement gender policy					

Others (Specify): _____					
----------------------------	--	--	--	--	--

21. How many male and female leaders are in the management committee?

Male: _____ Female: _____

22. Does your project have one-third gender policy?

Yes [] No []

23. Is the policy utilized as a guideline in selecting of project leaders?

Yes [] No []

24. In relation to one-third rule rate your project in terms of gender representation of leaders in management positions

Rate	Very high	High	Medium	Low	Very low
Perception					

25. Who currently holds the following positions in the management committee of the water project you are registered in? (Please tick appropriately)

Position	Male	Female
Chair person		
Vice chair person		
Secretary		
Vice secretary		
Treasurer		
Book keeper		
Ex official member(s)		
Employees: i) Plumber ii) Kiosk attendant iii) Manager iv) Accountant		
Others (specify): _____		

26. Are there pre-condition for leadership position? Yes [] No []

27. If yes identify them?

- i) Level of education [] ii) Religious affiliation [] iii) Political affiliation []
 iv) Social status [] v) Land ownership [] iv) Active membership []

28. Which gender dominates in the following project management activities?

Gender			
Management activities	Male	Female	Both
Planning			
Human resource(hiring of employees)			
Control of daily activities			
Revenue collection			
Record keeping			
Procurement			
Plumbing			
Kiosk attendant			
Manager			
Accountant			

Section C: Relationship between Level of Education and Gender Participation in Management of Water Projects

29. What is your highest level of education?

- (i) No formal education [] (ii) Primary []
 (iii) Secondary [] (iv) Tertiary college []
 (v) University []

29. Are there set conditions for one to be a member of management committee with respect to level of education? Yes [] No []

Explain: _____

30. State whether you agree with the following statements about influence of level of education on gender participation in management of water projects and indicate which gender is most favored (Where SD = Strongly disagree, D = Disagree, U = Undecided, A = Agree and SA = Strongly Agree)

Statements	Degree				
	SD	D	U	A	SA
Level of education affect participation in management activities					
Level of education affect division of labour					
Level of education affect election of leaders					
Level of education affect water utilization					
Level of education affect policy implementation on gender participation					
Level of education affect access to information on management of water projects					
Level of education affect attendance of meeting by women and men					

31. Which gender is most affected by level of education in participating in project activities?

i) Male [] ii) Females [] iii) Both []

Section D: Influence of Gender Roles on Gender Participation in Management of Water Projects

32. Who performs the following gender roles in your household?

Gender roles	Male	Female	Both
Reproductive roles i) Children rearing ii) Reproduction tasks (household chores, cooking, washing and cleaning)			
Productive roles i) Income generating activities ii) Provision of paid labour iii) Provision of unpaid labour			
Community work (collective organization of social events such as ceremonies and celebrations).			

33. What is your perception regarding following statements about influence of gender roles on gender participation in management of water projects and indicate which gender is most affected (Where SD = Strongly disagree, D = Disagree, U = Undecided, A = Agree and SA = Strongly Agree

Statements	Perception				
	SD	D	U	A	SA
Gender roles influence participation in management in management activities					
Gender roles influence division of labour					
Gender roles influence election of members on leadership posts					
Gender roles influence utilization of water					
Gender roles influence control of operation of the water management activities					
Gender roles influence attendance of management meetings					
Gender roles influence official's ability to perform management tasks.					

34. Which gender is most affected by gender roles in participating in project activities?

i) Male [] ii) Females [] iii) Both []

Section E: Relationship between land tenure and gender participation in the management of water projects

35. Under which category do your land rights fall under?

i) Individual ownership [] ii) Communal ownership []
 iii).Lease ownership []

36. To the current parcel of land owned, how were the land rights transferred to you?

i) Customary laws [] ii) Legal procedures []
 iii).Mutual agreement [] iv).Others: _____

37. What is your perception on the following statements about land tenure on gender participation in management of water projects and indicate which gender is most affected (Where SD = Strongly disagree, D = Disagree, U = Undecided, A = Agree and SA = Strongly Agree)

Statements	Perception				
	SD	D	U	A	SA
Land tenure affect participation in water management activities					
Land tenure affect water connections in the household/plot					
Land tenure affect division of labour in management					
Land tenure affect how water is utilized					
Land tenure affect likelihood to hold leadership positions in the water project					
Land tenure affect the likelihood of one becoming a member in the water project					

34. Which gender is most affected by land tenure in participating in project activities?

i) Male [] ii) Females [] iii) Both []

APPENDIX G: Divisional Water Officers Interview Guide

Dear respondent

I am a post graduate student conducting a research for an award of doctor of philosophy. This interview schedule is meant to solicit for information to highlight on selected socio-cultural factors affecting gender participation in management of water projects in Njoro sub-county. The information will help the researcher to suggest ways of curbing the problem management of water project.

Instructions

✓ Please respond to the questions below as per the guide

1. What is your role in management of the local water projects?
2. Which organizations are involved in the initiation of water and sanitation projects in your area?
3. What type of water projects are found in your area of jurisdiction?
4. What is the criterion for membership in the water project in your area?
5. How many water projects are in your area of jurisdiction?
6. What are the major uses of water supplied by various projects in your area of jurisdiction?
7. What are the most common pre-conditions of being in management team in the various water projects?
8. Do you think there is gender equity in the management of water project? Explain.
9. What is the average gender composition of the water management teams in your area of jurisdiction? Male_____ %
Female_____ %
Explain the causes of variation (if any) in the percentages? above:
10. Which socio-cultural factors influence gender participation in manathe water projects?
11. How does level of education affects gender participation in management of the water projects?

- 12). How does land tenure affect gender participation in management of water projects?
- 13). How does gender roles affect gender participation in management of water projects?
- 14) Are there any existing gender policies and strategies adequate enough for the involvement of women and men in the decision making and management of the water resources?
- 15). How does gender policies affect gender participation in management of water projects?
- 16) In your own opinion how could gender participation in the management of water projects under your area of jurisdiction be improved to ensure efficient service delivery to members?
- 17) Are there differences in allocation of duties among women and men in management of the water projects activities?
- 16) How can socio-cultural factors be controlled in order to ensure that equity and equality in gender participation in management of water projects?
- (i) Land tenure _____
- (ii) Level of education _____
- (iii) Gender roles _____

THANK YOU

APPENDIX H: Research Permit

CONDITIONS

- 1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.**
- 2. Government Officers will not be interviewed without prior appointment.**
- 3. No questionnaire will be used unless it has been approved.**
- 4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.**
- 5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.**
- 6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.**

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

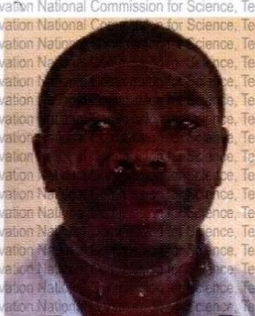
Serial No. A 9984

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:

MR. CHARLES KAMAU WAMBU
of EGERTON UNIVERSITY, 0-20115
EGERTON, has been permitted to
conduct research in Nakuru County
on the topic: INFLUENCE OF SELECTED
SOCIO-CULTURAL FACTORS ON GENDER
PARTICIPATION IN MANAGEMENT OF
WATER PROJECTS IN NJORO
SUB-COUNTY, NAKURU KENYA
for the period ending:
5th July, 2017.

Permit No. : NACOSTI/P/16/30981/12001
Date Of Issue : 6th July, 2016
Fee Received : Ksh 2000



Applicant's Signature

Director General
National Commission for Science, Technology & Innovation

APPENDIX I: Research Authorization Letter



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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when replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No.

Date:

NACOSTI/P/16/30981/12001

6th July, 2016

Charles Kamau Wambu
Egerton University
P.O Box 536-20115
EGERTON.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Influence of selected socio-cultural factors on gender participation in management of water projects in Njoro Sub-County, Nakuru Kenya,”* I am pleased to inform you that you have been authorized to undertake research in **Nakuru County** for the period ending **5th July, 2017.**

You are advised to report to **the County Commissioner and the County Director of Education, Nakuru County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

**BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner
Nakuru County.

The County Director of Education
Nakuru County.